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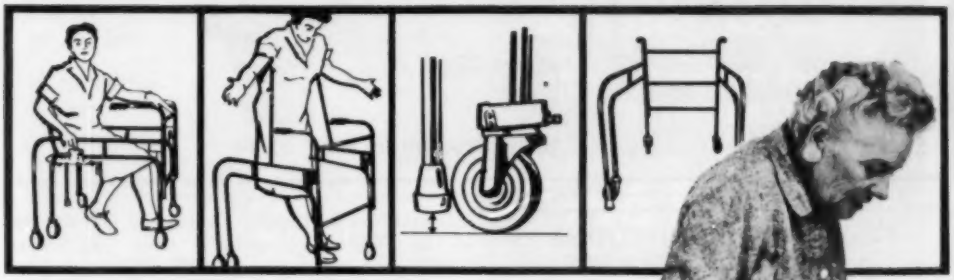

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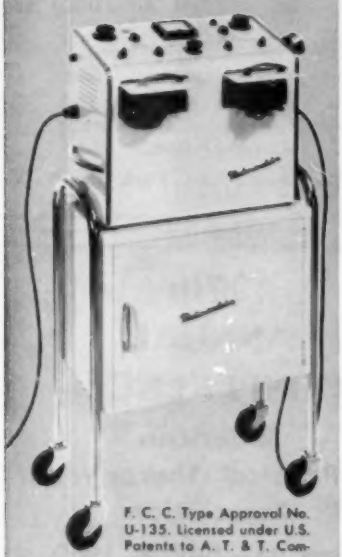

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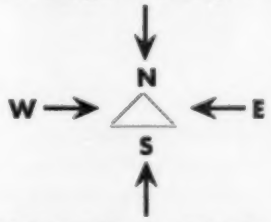

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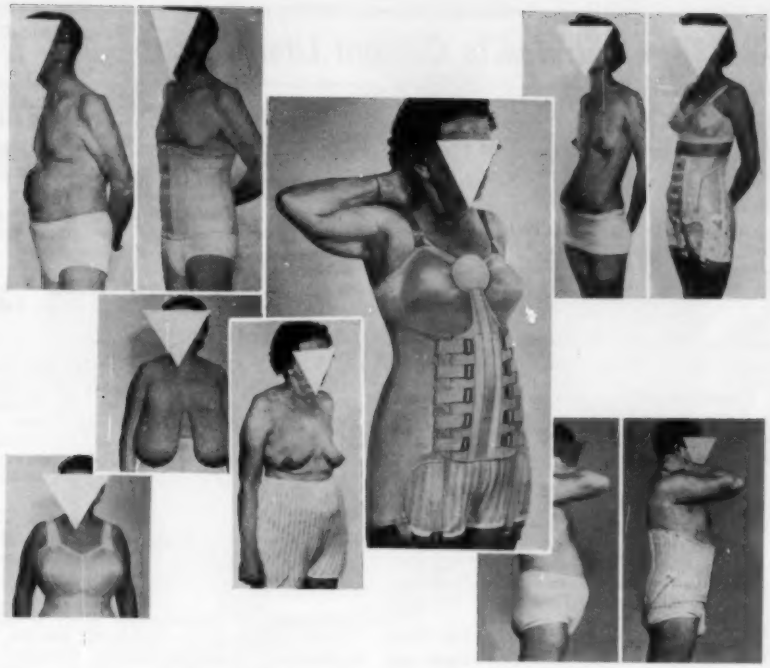

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CIRCULATION

Anticoagulants for Occlusive Cerebrovascular Lesions. E. F. Vastota and A. Frugh, Neurology, 9: 143-148, March 1959

Diagnostic Considerations in Patients with Stroke. Robert A. Kuhn, Geriatrics, 14: 135-149, March 1959

Hyperaemia Following Sustained and Rhythmic Exercise in the Human Forearm at Various Temperatures. R. S. J. Clarke and R. F. Hellon, J. Physiol., Lond., 145: 447-458, March 12, 1959

Some Aspects of Cardiovascular Regulation in Man. Adrian M. Ostfeld, Angiology, 10: 34-42, February 1959

The Value of Skin Thermometry in Peripheral Vascular Disease of the Lower Extremities. Z. M. Beekman, Angiology, 10: 70-80, February 1959

DERMATOLOGY

Panel Discussion—Influence of Ultraviolet Light on Human Skin. M. H. Slatkin et al., N. York State J. M., 59: 1520-1530, Apr. 15, 1959

EXERCISE

Bed Pedaling as an Adjunct to Postoperative Ambulation for Hastening and Improving Convalescence. H. D. Cogswell and E. W. Czerny, Am. Surgeon, 25: 143-145, March 1959

Exercise and Weight Control. Jean Mayer, Postgrad. M., 25: 325-332, March 1959

FUNCTIONAL AIDS

A Functional Handsplint. Margaret K. Wood, Am. J. Occup. Ther., 13: 22, January-February 1959

Mouthpieces for the Handicapped. Robert R. Buckley, Prostheses, Braces & Technical Aids, No. 3: 9-13, November 1958

HYDROTHERAPY

Use of Hydrocollator Packs in the Treatment of Neck and Shoulder Pains. Yvonnie M. Cordray and Edward M. Krusen, Jr., Arch. Phys. M., 40: 105-108, March 1959

NEUROLOGY

Chronic Lead Poisoning—A Review of Seven Year's Experience at the Children's Hospital, District of Columbia. George J. Cohen and Walter E. Ahrens, J. Pediat., 54: 271-284, March 1959

Deviation of the Head. F. A. Mettler, A.M.A. Arch. Neur. Psychiat, 81: 442-457, April 1959

Histopathology of the Facial Nerve in Herpes Zoster Oticus. J. Guldberg-Moller, S. Olsen and K. Kettel, A.M.A. Arch. Otolar., 69: 266-275, March 1959

Peripheral Facial Palsies Due to Tumors. Karsten Kettel, A.M.A. Arch. Otolar., 69: 276-292, March 1959

Prognosis in Traction Lesions of the Brachial Plexus. George Bonney, J. Bone Surg., Brit. Vol., 41-B: 4-35, February 1959

Shoulder Disability Following Radical Neck Dissection. Bela Szunyogh, Am. Surgeon, 25: 194-198, March 1959

The Brain Stem Damage Syndrome: Speech and Psychological Factors. Keith R. St. Onge and James J. Calvert, J. Speech & Hearing Disord., 24: 43-50, February 1959

The Mechanism of Pain in Trigeminal Neuralgia. Eric Kugelberg, J. Neur. Lond., 22: 36-43, February 1959

NEUROPHYSIOLOGY

The Relation between Nerve Fiber Size and Sensory Modality:Phylogenetic Implications of the Afferent Innervation of Cortex. George H. Bishop, J. Nerv. Ment. Dis., 128: 89-114, February 1959

The Relation between the Number of Impulses and the Integrated Electric Activity in Electromyogram. R. M. Bergstrom, Acta physiol scand., 45: 97-101, 1959

NEUROSURGERY

Recent Advances in Neurosurgery. Emanuel H. Feiring, N. York State J. M., 59: 1569-1589, Apr. 15, 1959

ORTHOPEDICS

Calcification of Intervertebral Discs in Children. A. Asadi, A.M.A. J. Dis. Child., 97: 282-285, March 1959

Management of Ankle Injuries Sustained in Sports. Thomas B. Quigley, J. Am. M. Ass., 169: 1431-1436, March 28, 1959

The Management of Elderly Patients with Fractures of the Upper End of the Femur. Felicity E. Soutter, Geriatrics, 14: 153-162, March 1959

Osteogenesis Imperfecta. Richard S. Bryan and John D. Dimichele, U. S. Armed Forces M. J., 10: 312-317, March 1959

Prevention and Treatment of Ski Injuries. Hans Kraus, J. Am. M. Ass., 169: 1414-1419, March 28, 1959

Recurrent Congenital Club-Foot—The Role of the M. Tibialis Posterior in Etiology and Treatment. Amnon Fried, J. Bone Surg., Am. Vol., 41-A: 243-252, March 1959

Resolving Scoliosis. J. C. Scott, J. Bone Surg., Brit. Vol., 41-B: 105-113, February 1959

Spondylolysis—Its Anatomy and Mechanism of Development. Hilel Nathan, J. Bone Surg., Am. Vol., 41-A: 303-320, March 1959

Surgical Treatment of Injuries to Ligaments of the Knee. Don H. O'Donoghue, J. Am. M. Ass., 169: 1423-1431, March 28, 1959

The Phasic Activity of the Muscles of the Lower Extremity and the Effect of Tendon Transfer. J. R. Close and F. N. Todd, J. Bone Surg., Am. Vol., 41-A: 189-208, March 1959

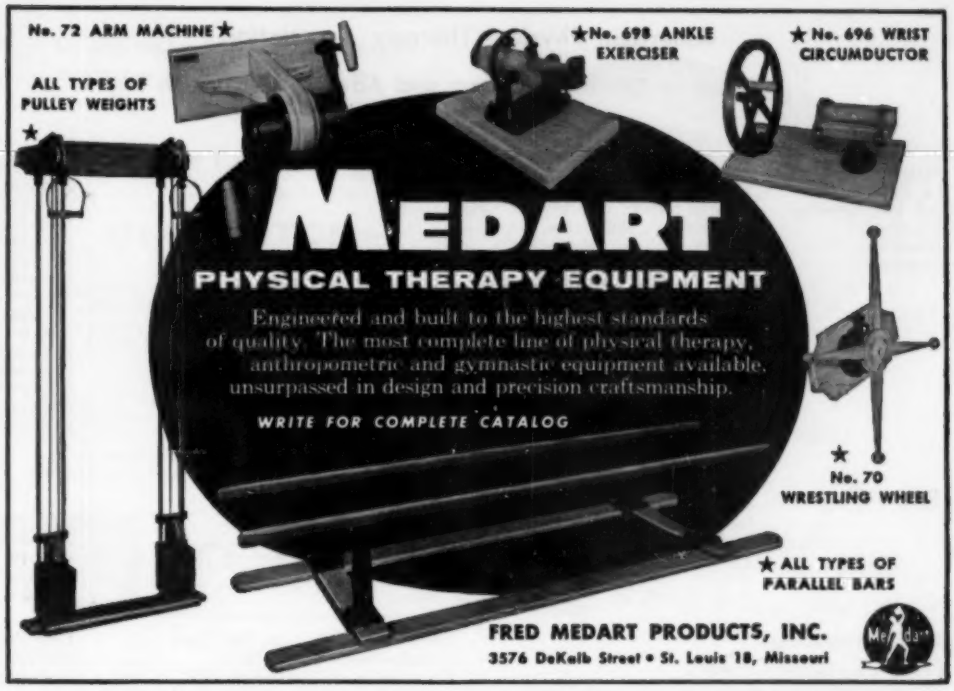
Treatment of Fracture Sequelae. Miland E. Knapp, J. Lancet, 79: 106-112, March 1959

Treatment of Paralysis of the Flexors of the Elbow. A. Segal, H. J. Seddon and D. M. Brooks, J. Bone Surg., Brit. Vol., 41-B: 44-50, February 1959

POLIOMYELITIS

Antibody Response of Adolescents and Adults to a Booster Shot of Poliomyelitis Vaccine. J. O'H. Tobin, Brit. M. J., 5122: 609-613, March 7, 1959

(*continued on page 481*)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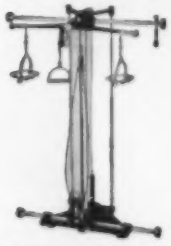

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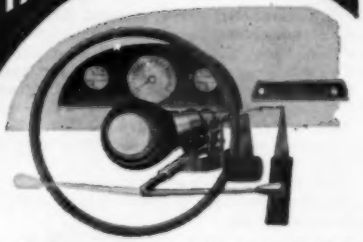

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Three Year Study of Lower Extremity Amputees at a Veterans Administration Center

Richard S. Magato, M.A.

Introduction

This paper is based on a three year study of the amputee program in the Physical Therapy Department of the Veterans Administration Center, Dayton, Ohio. The program is under the direction of Dr. Leo Rosenberg, Chief, Physical Medicine and Rehabilitation Service. The primary purposes of the study are (1) to bring into focus the problems encountered in such a program, (2) to evaluate the present approach, and (3) to take steps which will ultimately assure improvement in the future.

Medical records, charts, and physical therapy data, as well as personal observations, were taken into consideration in studying the 93 lower extremity amputees treated in the Physical Therapy Department during this three year period.

Age of Patients and Etiology of Amputation

It would seem pertinent to point out, first of all, that the Veterans Administration in general, and particularly this Center, is faced with the problem of providing an adequate rehabilitation program for the aged. According to a recently published article originating at this Center, it was determined that 67 per cent of the nontuberculous patients and 94 per cent of the domiciliary members were over 55 years of age. Approximately 35 per cent of the combined populations were over 65 years old.[1]

The patients involved in this study ranged in age from 23 years to 80 years 6 months. It should be noted that 61 per cent of the patients were 60 years of age or older, and that 73 per cent were above the age of 50 years (Table 1). This, of course, indicates that we are dealing primarily with the aged, and that the physical therapy program must be geared to cope with the complexities usually experienced in rehabilitating this group.

Among the 93 patients included in the study, the major reason for amputation was vascular disease (Table 2). This etiology is found to be more prevalent in elderly persons.

Also, of the 93 patients, 61 per cent (57), were unilateral above-knee amputations. This is due no doubt to the fact that most amputations performed for circulatory insufficiency are done at the above-knee site. Many surgeons feel that selecting an amputation site below the knee often retards healing; this eventually results in future amputation at a higher level. This reasoning is further substantiated by the fact that of the 20 unilateral below-knee amputations in the study, 13 were due to trauma and 7 to vascular diseases.

A breakdown of the etiological factors causing amputation is shown in figure 1. It was found that 74 per cent (69) of all amputees in the study had vascular diseases, 25 per cent (23) sustained

Chief, Physical Therapy Department, Veterans Administration Center, Dayton, Ohio.

TABLE 1. AGE OF PATIENTS

Age	No. of Patients	Per Cent
20-29	5	5.38
30-39	15	16.13
40-49	5	5.38
50-59	11	11.83
60-69	36	38.70
70-79	18	19.35
80&over	3	3.23
Totals	93	100.00

traumatic injuries, and 1 per cent (1) had a malignancy.

Lumbar sympathectomies were performed on 26 patients in an attempt to improve circulation and to save the extremity.

Further study of the case histories of patients revealed many other diagnoses, one or more of which were concurrently present and became a determining factor in the treatment and rehabilitation of the patient (Table 3). Fifty-four per cent (51) of the patients had general arteriosclerosis, and 38 per cent (36) were afflicted with heart disease. These and other disabling diseases had a tendency to make each patient more of an individual problem, requiring special attention.

The multiple diagnoses found among the patients were in some instances responsible for additional problems encountered in treating the amputee. Twenty-three patients experienced stump healing difficulties. Eighteen had ulcerated areas and five had draining fistulae. In addition, four complained of localized stump pain, and were diagnosed as neuromas. Four had phantom pains which caused them a great deal of discomfort.

Of the total number of patients involved in the study, 92 per cent (86) had nonservice connected disabilities, whereas 8 per cent (7) had service connected disabilities resulting in amputations.

TREATMENT PROGRAM

In the rehabilitation of amputees, it is understood that among other important factors, the age and also sex of the patient must be given careful consideration before the pre- and postprosthetic program objectives are determined. For instance, it is a known fact that young people are more easily trained in the use of prostheses.[2]

In rehabilitating the amputee, the psychological, social, and physical capabilities of each patient must be carefully evaluated. Physicians,

Figure 1. Breakdown of Etiological Factors

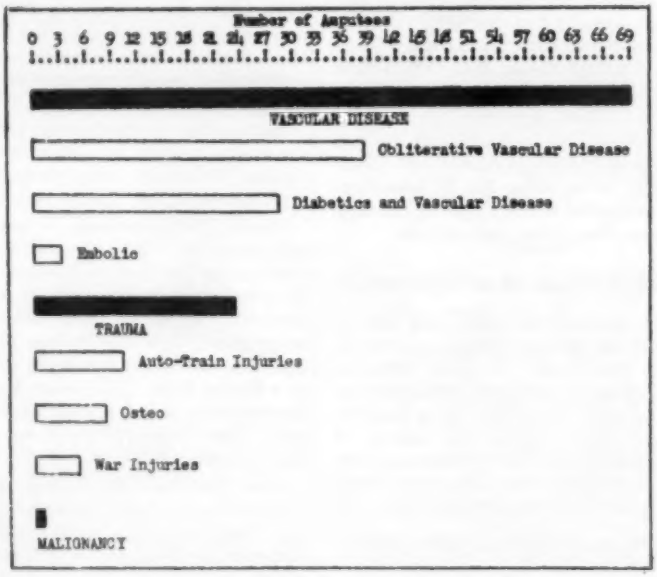
Number of Amputees
0 3 6 9 12 15 18 21 24 27 30 33 36 39 42 45 48 51 54 57 60 63 66 69
VASCULAR DISEASE
Obliterative Vascular Disease
Diabetics and Vascular Disease
Embolic
TRAUMA
Auto-Train Injuries
Osteo
War Injuries
MALIGNANCY

TABLE 2. ETIOLOGY OF AMPUTATION

Types of Amputations	No. of Unilateral		No. of Bilateral	Etiology		
	Right	Left		No. Vascular	No. Trauma	No. Sarcoma
Unilateral Above Knee	30	27		47	9	1
Bilateral Above Knee			7	7		
Unilateral Below Knee	11	9		7	13	
Bilateral Below Knee			2	1	1	
Knee Disarticulation (Gritti Stokes)	1	1		2		
Right Syme's Left Transmetatarsal			1	1		
Right Above Knee Left Below Knee			1	1		
Bilateral Transmetatarsal			2	2		
Left Below Knee Right Transmetatarsal			1	1		
Totals	42	37	14	69	23	1

prosthetists, and therapists should work together as a team, each respecting the other's role.

In order to consider carefully individual differences of patients, the amputee must be closely evaluated by physician and therapist, and a specific program set up for each patient. This is especially important with the aged since many of them have other disabling diseases (Table 3).

Physical therapy is initiated preoperatively so that the efficacy of the treatment can be attained. This approach is not feasible, however, in all cases. Therefore, measures should be taken immediately following amputation to institute bed positioning procedures which will aid in preventing contractures of the stump. The above-knee amputee should be encouraged to lie in the prone position with the stump adducted and the pelvis kept in a neutral position.

According to Bryce, the above-knee amputee should not be permitted to sit up for more than brief periods of time during the first 10 postoperative days. Flexion of the hips to 90 degrees, such as in sitting, may cause reattachment of the hamstring muscles to occur more proximally than is desirable. When the hamstrings reattach high on the femur, the resultant slack decreases the functional capacity of the muscles and will be reflected in the gait.[3] Sitting also encourages hip flexion contracture which could jeopardize the patient's future success in using a prosthesis. Active and progressive resistive exercises for unaffected extremities, plus back and abdominal musculature, are started during this period.

TABLE 3. DIAGNOSES COMPLICATING REHABILITATION

Diagnosis	No. of Patients
General Arteriosclerosis	51
Arteriosclerotic Heart Disease	35
Rheumatic Heart Disease	1
Diabetes Mellitus	28
Cerebral Vascular Accidents	5
Parkinson's Disease	1
Hypertension	10
Rheumatoid Arthritis	3
Osteoarthritis	1
Tuberculosis	5
Neuropsychiatric	6
Chronic Brain Syndrome	4
Peripheral Neuropathy	2
Hernia (Inguinal)	5
Cirrhosis Liver	4
CNS Loss	1
Cataracts	4
Chronic Bronchitis	2
Chronic Emphysema	3
Chronic Asthma	2
Bilateral Blindness	1

TABLE 4. PATIENTS RECEIVING PROSTHESES AND MEANS OF AMBULATION

Type of Prosthesis	No. of Patients	Means of Ambulation	No. of Patients
Above Knee Prosthesis - Suction Socket	9	With Cane	28
Above Knee Prosthesis - Conventional	24	Without Aid	25
Below Knee Prosthesis	21	Lofstrand Crutches	3
Symes	1	Unable to Ambulate	4
Knee Disarticulation	2		
Shorties (Bilateral)	1		
Transmetatarsal (Bilateral)	2		
Total	60	Total	60

Stump activity is minimal during this time in order to allow the reattached muscles to heal. Bandaging of the stump should be started approximately two weeks after surgery, or when the stump is healed. The purpose is to shape the stump and to prevent edema. Circumference measurements of the stump should be recorded weekly until the patient receives his prosthesis.

Crutch walking should be introduced as soon as possible, depending on the age and general condition of the patient. The patient should be encouraged to flex and extend the stump while ambulating.

As soon as the healing is complete, more vigorous exercises for the stump should be encouraged. Exercise for the above-knee amputee should include active and progressive resistive movements to all stump muscles with emphasis being placed on the gluteus maximus, adductors, and internal rotators of the hip. Development of all musculature of the unaffected lower extremity is desirable. The below-knee amputee should stress development of the quadriceps, with activities directed to the hamstrings and hip musculature.

The elderly amputee with a vascular disease is carefully observed for a period of approximately four to six weeks, during which time he receives stump muscle strength and range of motion tests. He is also evaluated for vascular insufficiency of the intact extremity. This consists of oscillometric testing, skin temperature readings, and a heat reflex (Landis Gibbons) test. This information plus the reaction of the patient to exercises, crutch walking, and pylon training is presented to the prosthetic team to determine if a prosthesis is feasible.

We have found the pylon to be a valuable adjunct in training elderly amputees. It aids them in learning balance and in gaining confidence. It is true that bad walking habits may be acquired by using a pylon, and therefore it is not always used in training the younger patient.

Crutch walking is used as a testing device to determine whether the vascular diseased extremity will tolerate walking activities. If the patient is a good crutch walker, has good balance, can swing through, and can ascend and descend stairs without help, he is considered a potential candidate for a prosthesis. The patient who can walk moderate distances with crutches, without excessive fatigue and "cramping pains" in the intact extremity is usually given a prosthesis. We feel that the addition of a prosthesis will relieve some of the stress placed upon the remaining limb, and will therefore assist in retarding the progress of the vascular disease.

RESULTS

Sixty-five per cent (60) of the patients in the study received some type of prosthesis, while 35 per cent (33) were not given a prosthesis. Data on the types of prostheses prescribed are presented in table 4, along with the means of ambulation.

Of the 60 patients receiving prostheses, 28 walked well with the aid of a cane, and 25 were able to walk without aids. Three patients needed Lofstrand crutches to ambulate safely. Only four were unable to ambulate with their appliances when discharged. One person with a cerebral vascular accident diagnosis was unable to comprehend gait training instruction of the therapist. Two patients had been approved as candidates for prostheses before being given a thorough checkout by the staff of the Department of Physical Medicine. Of the two, one patient was discharged to his home, and the other went home against the advice of physicians. The remaining member of the foursome walked poorly because he would not take the advice of the therapist, and insisted, "I can work out these problems for myself."

Thirty-three patients did not receive prostheses. This was because each patient's condition was complicated by other factors: 12 had advanced cardiac disease; 19 had advanced vascular disease of the remaining leg; 2 had had cerebral vascular accidents with vastly impaired function; 3 had advanced tuberculosis; 15 were poor crutch walkers, 4 were only fair; and 14 could not progress beyond the use of a wheel chair.

The disposition of the cases involved in the study is shown in table 5. The majority of patients were discharged to their homes. For reasons indicated in the table, others either remained in the hospital or in the domiciliary.

Of the 93 cases included in the study, 10 died within the three year period. Three had received prostheses and had used them until the time of death. Seven patients had not been given prostheses because of serious ailments other than the amputation, but were included in the study although they did not receive extensive treatment.

TABLE 5. DISCHARGES

Place	No. of Patients
Discharged to home	50
Discharged to domiciliary*	16
Remained in hospital (Tuberculosis, Intermediate, or GMAS) for treatment of other conditions	11
Remained in domiciliary (these were previous domiciliary members)	16
Total	93

* Domiciliary members make their home at the Center.

OUTSTANDING CASES

Three remarkable cases were noted in the study. A 61 year old male with left hemiplegia and a left above-knee amputation, became a good walker in spite of his disabilities. His left upper extremity was completely flaccid and the left stump showed weakness of the gluteus maximus and gluteus medius muscles. However, he was placed in the amputee exercise program and instructed in pylon training. He wore a modified above-knee prosthesis with a lock on the knee that was easily released when he assumed a sitting position. This patient walked with one Lofstrand crutch and was able to travel moderate distances and to perform most of the activities of daily living.

A 71 year old male right above-knee amputee had a history of an old right hip fracture. This had resulted in an ankylosed hip with a 25 degree hip flexion contracture. The extremity was amputated because of arteriosclerosis obliterans which resulted in gangrene. This person was given preprosthetic training, including pylon ambulation, and became a proficient walker with a cane. He could perform all activities of daily living and could travel long distances.

A 24 year old male received multiple fractures and head injuries in an automobile accident which left him with a right hemiplegia. Both lower extremities were fractured as a result of the accident and the right extremity was amputated above the knee. Good improvement of strength was attained in the right upper and lower extremities. Speech therapy aided immeasurably in improving the verbal expression of the patient. He was given a right above-knee suction socket prosthesis, and after several months of training became adept in walking long distances and carrying out activities of daily living without aids.

SUMMARY

A three year study of 93 lower extremity amputees has been presented with the hope that it will provide valuable information in evaluating the effectiveness of our present program and that it will aid us in making improvements in the future. Honest evaluation of our methods of treatment can only be attained by further study.

One of the foremost problems encountered in rehabilitating the aged amputee is that of conditioning the stump so that prosthetic fitting difficulties can be held to a minimum. It must be remembered that frequently other physical and psychological disabilities block the way of the aged patient's adjustment to the use of his prosthesis. Perfect gait patterns cannot always be

obtained. The study points out, however, that the aged amputee can be trained to use a prosthesis even though he may be handicapped by several disabling diseases. It is important to remember that if the person can learn to move about independently, he will have undergone a satisfactory experience, and will have a much more useful feeling during the remaining years of his life.

In an amputee rehabilitation program such as that dealt with in this study, practical goals must be kept in mind when a rehabilitation regime is outlined for the severely disabled patient. "Often the best possible wheel chair existence or a status called independence is more desirable than to aim for an end result that lies beyond the patient's physical and psychological capabilities."[4]

REFERENCES

1. Tomasulo, A., Rosenberg, L., and Matheny, W.,: The classification and management of patients with long term illness. Veterans Administration Information Bulletin IB-10-110, (Aug. 30) 1957. Pp. 20-24.
2. Tepperberg, Irving.: Physical medicine rehabilitation in the treatment of above-knee amputees, mimeographed material distributed by the Veterans Administration, P-256, June 1955. P. 1.
3. Bryce, Margaret.: Physical Therapy After Amputation: The Treatment of the Unilateral Lower Extremity Amputee, The University of Wisconsin Press, 1954. P. 6.
4. Heather, Arthur J., A two-year follow-up study of the patients admitted to the rehabilitation center of the hospital of the University of Pennsylvania, Am. J. Phys. M., 37:5, (Oct.) 1958. Pp. 237-255.

Variations in Current Manual Muscle Testing

Margaret M. Wintz, M.A.

Muscle testing is a procedure for the evaluation of the function and strength of individual muscles and muscle groups based on effective performance of a movement in relation to the forces of gravity and manual resistance. The technics necessitate a thorough knowledge of functional anatomy in both the normal and pathological patterns and a basic understanding of the mechanics of forces. As a test, the procedure is reliable only if the same technic is duplicated on successive examinations.

Physical therapists now are aware that there are variations in manual muscle testing technics and that these differences in testing methods may lead to variations in grading. The purpose of the present study was twofold: (1) to investigate current methods of manual muscle testing of the shoulder girdle and hip regions, and (2) to compare and analyze the differences found from the point of view of basic functional anatomy. Eleven muscles or muscle groups were selected for study on the basis of differences in testing found in the literature and in the personal experience of the author. These were: anterior deltoid, posterior deltoid, serratus anterior, middle trapezius, lower trapezius, latissimus dorsi, rhomboids, internal rotators of the shoulders, gluteus medius, tensor fascia lata, and internal rotators of the hip. Test procedures for six of these muscles are summarized in the present report.*

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From M.A. thesis submitted to the Division of Physical Therapy, Stanford University, June, 1957; Fellow of the National Foundation for Infantile Paralysis.

METHOD

Data were obtained from material published by persons who have contributed to the development of manual muscle testing, from anatomy texts, and from published and unpublished studies relating to muscle function. In order to determine the various methods of manual testing in current use, information was secured from a number of physical therapists regarding their individual technics of testing and record forms used. By means of a questionnaire survey a description of testing was received from 52 therapists, representing 22 states. Muscle test record forms representing 42 institutions were obtained.

PRESENTATION OF DATA

Because of the qualitative nature of the study, no attempt was made to handle the data statistically. A chart for each muscle shows the tests

* Thesis is available from Stanford University through Inter-Library Loan.

that were reported by five or more persons in relation to the following factors: position of the body, position of the part, position of related joints, placement of manual resistance, and direction of resistance.

Anterior Deltoid

There were three variations in basic positions of the shoulder; all examiners performed with the subject seated (Fig. 1). The majority of examiners tested the anterior deltoid by flexion of the arm to 90 degrees. In the second variation reported, the arm was raised to horizontal between the position of flexion and abduction, in slight external rotation. In the third variation, the arm was abducted to 90 degrees. The direction in which resistance was given varied with the arm position. With the arm in flexion, resistance was applied downward in the direction of extension. With the arm in a position between flexion and abduction, the resistance was directed diagonally downward and inward toward extension and adduction. With the arm in abduction, resistance was given by the majority in the coronal plane in the direction of adduction; one person, however, applied pressure in the horizontal plane in the direction of horizontal abduction, in which case the test motion does not parallel the direction of applied resistance.

On the clinical record forms submitted the anterior deltoid was listed as a separate muscle on 23 charts. Among the remainder, "shoulder flexion" appeared on 15; 4 listed the entire deltoid muscle as one unit; and the rest recorded the movement of flexion as a combined effort of the anterior deltoid and the coracobrachialis muscles.

Discussion

A historical review of the literature explains the sources of the current variations in test position. Wright's[1] test† for the anterior deltoid was the movement of the arm in flexion "forward and overhead"; Legg and Merrill[2] used abduction to 90 degrees as the test position; Brunnstrom[3] and Daniels et al.[4] described flexion to 90 degrees; the Kendalls[5] preferred a position of 80 degrees of abduction in a plane slightly anterior to the coronal. In their later text the Kendalls used the same diagonal position but also placed the arm in slight external rotation.

Through his electrophysiological experiments, Duchenne[6] demonstrated that the most anteriorly located fibers of the deltoid produce an elevation of the arm to 90 degrees and move the humerus obliquely forward and inward. In a voluntary movement of flexion to 90 degrees the anterior deltoid is assisted by the pectoralis major, long and short heads of the biceps, coracobrachialis, middle deltoid, and supraspinatus. Wright[7] did not observe a contraction in the biceps during arm flexion except when the movement was resisted. Inman's[8] electromyographic studies indicated that the supraspinatus contracts in shoulder flexion with as much activity as it does in abduction, although in flexion it reaches its peak potential slightly sooner than in abduction. When the arm is abducted the pectoralis major does not act, according to Inman. It would seem that an elevation in oblique plane would minimize the function of the pectoralis major but retain the elevating capacity of the anterior deltoid.

With regard to the rotation position of the humerus, the Kendalls[9] maintained that with the patient in the sitting position a slight rotation of the arm externally is necessary in order to bring out the maximum action of the anterior deltoid in its antigravity function. On the other hand Wright[7] observed that a patient with a weak deltoid can often carry out the movement of abduction in external rotation but the slightest weakness of this muscle will show up if the arm is internally rotated. Brunnstrom[10] demonstrated that in the absence of the deltoid and the supraspinatus a well developed biceps can fully abduct the arm if the humerus is kept in extreme external rotation.

It would seem that there is a difference in the number of participating muscles entering into the various tests for the anterior deltoid; however, the quantitative role of these muscles in various movements has not been determined. From a functional standpoint, Inman et al.[8] have emphasized that we can no longer think of abduction and flexion in terms of the deltoid alone, but must consider the short rotators which assume equal importance. The subscapularis, infraspinatus, and teres minor, as depressors of the humerus, act as a second component of a muscle force couple which keeps the head of the humerus from riding up in the glenoid fossa throughout both flexion and abduction. The infraspinatus and teres minor show greater activity in flexion, whereas the subscapularis demonstrates a relatively higher electrical potential during abduction. The teres major acts only when it is necessary to maintain a static position.

In the anterior deltoid tests variations in the lever arm of the test force applied is noteworthy. When the elbow is flexed, the effective weight of

† Wright's name has been cited for the tests taken from Lovett's early book on *Treatment of Infantile Paralysis* in view of the fact that Lovett credited her for this material.

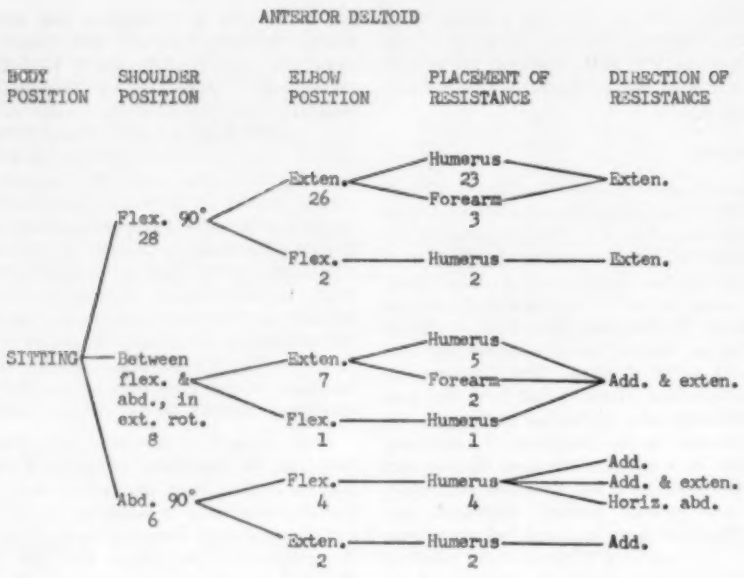

Figure 1.

the part is reduced, since the center of gravity of the limb moves closer to the axis at the shoulder. A factor of even greater importance with regard to grading is the placement of manual resistance. About four fifths of the examiners applied pressure above the elbow, whereas the remaining one-fifth approximately doubled the length of the lever arm by giving resistance to the forearm, making the test more difficult for the patient. (It was not determined whether the test force was applied through the range or at the end of the range of motion.)

The position of the elbow is important not only because it alters the leverage but also because it affects the efficiency of the biceps, which is a two-joint muscle. With the elbow flexed its efficiency as a shoulder flexor will be decreased due to "active insufficiency," since it rapidly loses its ability to exert tension as it shortens.

Serratus Anterior

Three test positions were reported for the serratus anterior: sitting, supine and standing (Fig. 2). Most of the examiners used the sitting test in which the arm was flexed to 90 degrees and the subject reached the arm forward. One person placed the arm in 110 degrees of flexion, while two others used 120 and 135 degrees respectively. In the supine position with the arm flexed to 90 degrees, the subject reached upward. In the standing test the subject placed his hands against a wall at shoulder level or higher and pushed forward with his elbows straight.

In all three tests manual resistance was applied in a direction opposing scapular abduction but the direction of motion varied with the body position. With the subject sitting or standing, the resistance was applied in a horizontal plane, perpendicular to the force of gravity; in the supine position, pressure was given vertically downward.

The serratus anterior was listed individually on the manual test record forms with only two exceptions. In these instances the movement of "scapular abduction" was indicated instead.

Discussion

The movements of flexion and abduction of the humerus are performed with simultaneous upward rotation of the scapula. Wright [1] considered the primary action of the serratus to be scapular upward rotation and therefore tested its function by having the subject flex his arm overhead against resistance and noting the position of the scapula. Legg and Merrill [2] and Brunnstrom [3] also checked over head elevation for serratus function. Pushing the shoulder and arm forward in a horizontal plane against resistance was described in 1932 by Legg and Merrill [2] and later

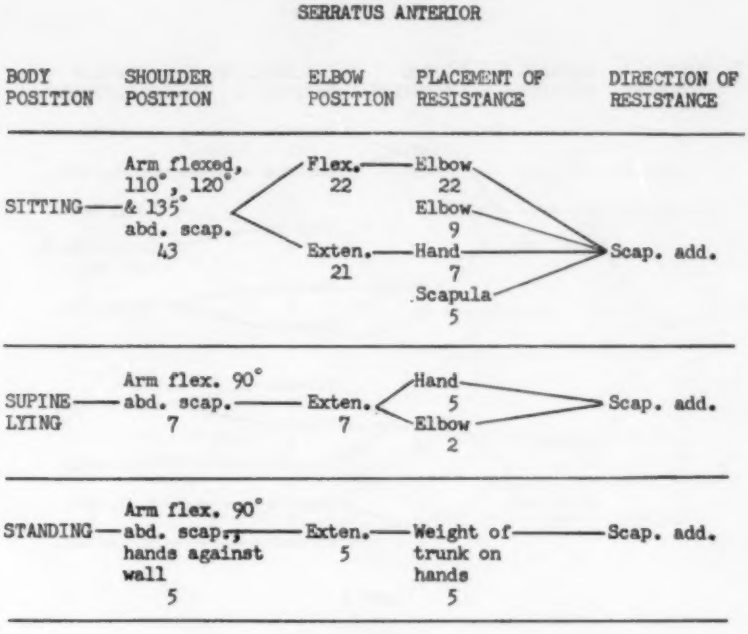

Figure 2.

by others.[3, 4, 5] In 1949 the Kendalls [9] added the standing position test in which the patient places his hands against the wall and pushes forward.

The serratus anterior acts with the trapezius during arm elevation. The upper trapezius and the levator scapulae combine with the upper digitations of the serratus to form a unit to elevate the shoulder, to give it passive support and to act as the upper force for rotation of the scapula. The lower rotary component is made up of the lower trapezius and distal serratus anterior. Inman's [8] electromyographic studies indicated that the lower serratus is more active when the arm is elevated in flexion than it is in abduction. Conversely, the lower trapezius is more active in abduction.

Wright [7] pointed out that in addition to its rotary function, the serratus anterior also holds the vertebral border of the scapula close against the ribs during elevation of the arm. Brunnstrom [11] observed that subjects with paralysis of the serratus cannot raise the arm higher than to a horizontal plane, in either flexion or abduction, even though the trapezius and deltoid are functioning normally. There is no other muscle capable of substituting completely for the serratus anterior.

A point of variation in the test positions found in the survey is the effect of gravity on abduction of the scapula. In the sitting position, since the arm is ordinarily supported by the examiner while resistance is given, gravity is not a factor opposing the movement. In supine lying, the serratus anterior is used to lift or hold the scapula upward against the maximum force of gravity.

Middle Trapezius

Two variations in test position were reported for the middle trapezius (Fig. 3). Each test was used by an equal number of persons. With the subject in a prone lying position, the humerus was abducted to 90 degrees and the subject raised his arm from the table with the motion taking place between the scapula and the thorax and not at the glenohumeral joint. The second test was similar except that the arm was abducted in external rotation. Resistance was applied by the majority on the scapula in the direction opposed to scapular adduction. Those who used the arm as a lever applied pressure downward.

The weight of the arm was used to provide resistance in both tests. Most of the examiners kept the elbow extended and the middle trapezius was required to adduct the scapula against the

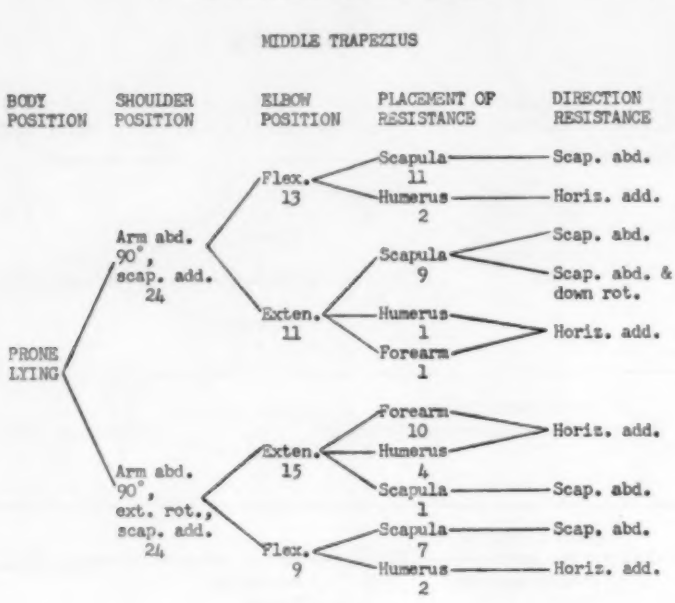

Figure 3.

effective weight of the limb. The remaining persons had the patient flex the elbow and thereby decreased the test load. Perhaps of greater importance in this test is the leverage factor in the placement of resistance. More than half of the testers applied pressure to the scapula directly. The next greatest number increased the lever arm of the test force three-fold by giving resistance to the forearm, whereas a third group applied it to the humerus.

The middle trapezius was listed as a separate muscle on 37 of the 46 clinical record forms reviewed in the survey. The remaining charts listed scapular adduction.

Discussion

Early writers,[1, 2] tested the function of the middle trapezius during arm elevation by observing the position of the inferior angle of the scapula. Wright [7] also described a prone test with the arms stretched forward above the head to ascertain the function of the trapezius and the serratus. The Kendalls [5] described a prone test with the arm abducted to 90 degrees; in a later test, the arm was placed in abduction and external rotation.

The middle part of the trapezius adducts the scapula and keeps the vertebral border against the ribs while the humerus is outwardly rotated. It contracts in any strong effort with the horizontal abductors of the humerus.[7] Electromyographic studies of shoulder function indicate the middle trapezius is most active in arm abduction at 90 degrees and decreases slightly when the shoulder position is 180 degrees. When the arm is raised in horizontal abduction from a prone postion, the entire trapezius contracts and adducts the scapula toward the spine. In this test movement the posterior deltoid must be strong enough to maintain the weight of the arm against gravity. If the arm is externally rotated in the abducted position, the teres minor and infraspinatus pull on the axillary border and require increased scapular stabilization by the middle fibers of the trapezius.

Lower Trapezius

All four test positions reported for the lower trapezius were performed with the subject prone lying (Fig. 4). In the most widely used test, the arms were extended over head and the forehead was resting on the table. Variations of this position were minor, with the arm outwardly rotated and positioned diagonally over head. Resistance was applied in most cases in a direction opposed to scapular adduction. Where the limb was used for leverage, pressure was given downward. A point of considerable variation was the lever arm

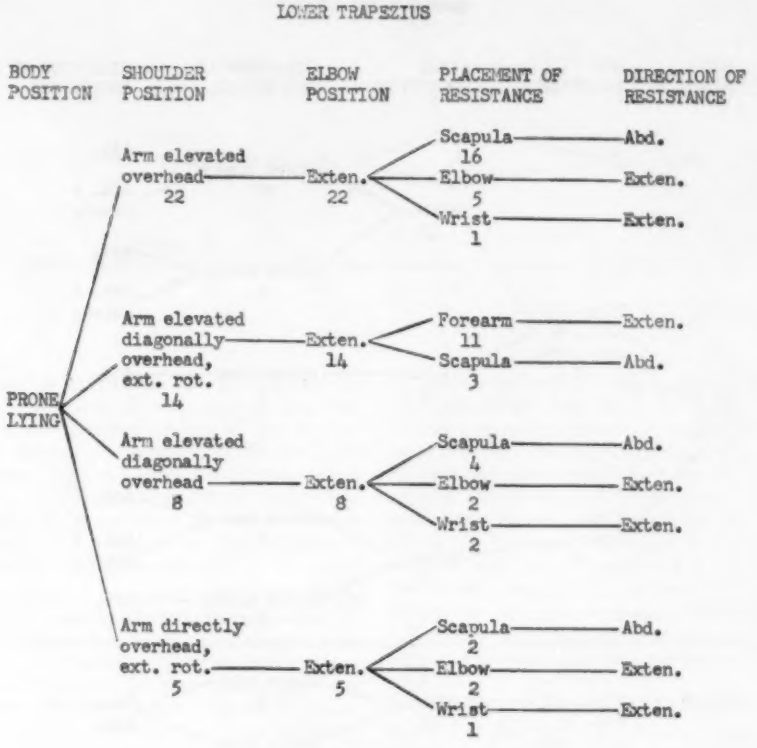

Figure 4.

length of manual resistance applied, as in the tests for the middle trapezius. The majority of persons applied pressure to the scapula directly, approximately one-third placed resistance on the forearm, and the remaining group used the humerus.

The lower trapezius was listed as a separate muscle on 27 clinical record forms; the movement of scapular depression appeared on 13; scapular adduction as a combined function of the trapezius and rhomboids was found on four records; and the remaining two charts listed the upper and lower components of the trapezius together.

Discussion

There seems to be considerable agreement in the literature regarding positions for testing the lower trapezius. Although Legg and Merrill [2] did not describe a specific test for this muscle, they observed that it contracted during trunk raising from a prone position. Wright's [1] prone-lying test with the arms extended over head has been widely used. In an article devoted to testing of the shoulder girdle muscles, Brunnstrom[11] suggested that action of the lower trapezius can be brought out clearly with the subject seated by having him raise his arms to place the hands on top of the head and then by pushing his elbows back against resistance.

Since in prone lying with the arms extended over head raising of the arms is impossible without the stabilization of the lower trapezius, a specific test is possible as in the case of the serratus anterior.

Tensor Fascia Lata

Of the three variations in testing position found in the study, two were performed with the patient lying on the unaffected side and one with the patient in the supine position (Fig. 5). In the most widely used test, the patient was side lying, the hip was flexed to 45 degrees, abducted and internally rotated. Manual resistance in the side-lying tests was applied in the direction of adduc-

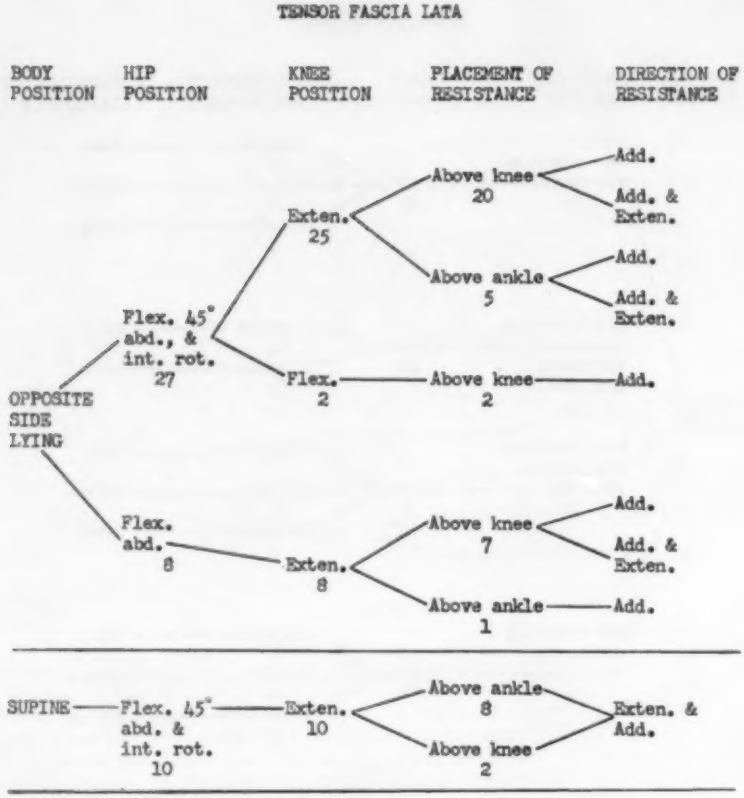

Figure 5.

tion and, by seven persons, toward slight extension. The supine test motion was resisted in the direction of extension and toward slight adduction.

Since muscle testing around the hip involves lifting of the lower extremity, the postion of the knee alters the effective weight of the part. By keeping the knee in extension most of the examiners utilized the maximum weight of the limb; however, in two instances the knee was flexed, reducing the effectiveness of the test load. Another important mechanical factor is the difference in the lever arm of the resistance. Two thirds of the examiners applied resistance above the knee; the remaining third doubled the length of the lever arm by giving pressure at the ankle. For a given manual force the latter position would make the test more difficult for the patient.

The tensor fascia lata was listed as a separate muscle on 40 clinical record forms. On the remaining six forms it was combined with the gluteus medius and listed as an abductor of the hip.

Discussion

Variations in test positions corresponding to questionnaire reports can be found in the literature. Wright [1] and Brunnstrom [3] did not describe a specific test for the tensor fascia lata. Brunnstrom listed it as one of the hip abductor group. Legg and Merrill [2] stated that this muscle can best be tested with the patient side lying by abduction of the hip in a flexed position. Daniels et al.[4] used the same position but added internal rotation to the motion; the rotation was omitted in a later edition of this text (1956). Kendall [5] described a supine test with the leg flexed to about 45 degrees in an abducted and internally rotated position.

In the side-lying tests the abductor component

INTERNAL ROTATORS OF HIP

BODY POSITION	HIP POSITION	KNEE POSITION	PLACEMENT OF RESISTANCE	DIRECTION OF RESISTANCE
SUPINE	Exten. & int. rot. 24	Flex. 24	Ankle 23 / Knee 1	Ext. rot.
SITTING	Flex. & int. rot. 20	Flex. 20	Ankle 20	Ext. rot.

Figure 6.

of the tensor is utilized to lift the leg against the pull of gravity. The principal assisting muscles are the anterior fibers of the gluteus medius and minimus[4]; in addition, Wright[7], observed a slight contraction in the gluteus maximus in this position. The lateral abdominal muscles stabilize the pelvis on the trunk. In this position gravity has no effect on hip flexion and probably assists internal rotation.

When the patient is supine, the tensor fascia lata is tested by raising the leg against gravity in flexion and internal rotation in an abducted position. Principal assisting muscles in this instance are the rectus femoris, the gluteus minimus, and the iliopsoas; Wright [7] stated that the iliopsoas does not begin its contraction much before a right angle is reached at the hip and the sartorius cannot contract strongly with the thigh inwardly rotated. In this test the abdominal muscles must prevent anterior rotation of the pelvis, and tension in the quadriceps is necessary to keep the knee extended.

Although most authors agree that the tensor fascia lata flexes, abducts, and internally rotates the thigh, there is a disagreement regarding its best test position. It seems reasonable to conclude that a muscle tested for one function may not receive the same grade when it is tested in the performance of another motion. Another factor which will affect grading is the difference in the lever arm of the manual resistance. A muscle graded "normal" against resistance applied at the knee might be graded lower if it is retested against the same resistance when given at the ankle.

Internal Rotators of Hip

The internal rotators of the hip were tested with the patient in two different positions, supine and sitting (Fig. 6). In the supine position, used by most examiners, the hip was extended and the knee was flexed over the edge of the table. The patient internally rotated the thigh and lifted the leg outward. In the sitting position, both the hip and the knee were flexed and the patient rotated the thigh inward in the same manner. In both test positions the leg serves as a lever by which the examiner can exert force against the rotated thigh in the manner of a crank. All but one of the examiners took advantage of this arrangement and gave resistance above the ankle in a direction opposing hip internal rotation. One person, however, applied resistance above the knee.

With one exception, the record forms indicated that the internal rotators of the hip were tested as a group; only one chart listed the gluteus minimus separately.

Discussion

The literature reveals considerable agreement in the testing position for the hip internal rotators. Legg and Merrill [2], Kendall [5], and Brunnstrom [3] used the sitting position as originally described by Wright.[2] Daniels et al.[4] modified the test by placing the patient in the supine position with the knee flexed over the edge of the table.

The three principal internal rotator muscles of the hip are generally considered to be the tensor fascia lata, gluteus minimus, and anterior portion of the gluteus medius. Last [12] stated that internal rotation of the femur is too powerful a movement to be performed only by the rather weak anterior gluteus medius and minimus. The pull of the psoas aided by the pectineus and adductor longus was said to be mainly responsible for the movement. Mulliner[13] was of the opinion that the gluteus medius assists medial rotation only when the hip is flexed, and Wright [7]

observed that the tensor fascia lata assists in internal rotation only when there is a simultaneous attempt to flex the hip. Other authors cite various assisting muscles. Williams and Wesley [14] found in electromyographic studies that the adductor longus contracts in inward rotation in both the flexed and the extended position of the hip. Steindler [15] mentioned that the foremost fibers of the gluteus maximus might have some internal rotatory force when the thigh is flexed and that in this position the piriformis acts as an accessory internal rotator.

The range of hip rotation is of interest in this test as there is a marked difference with the hip flexed and with it extended. In a study of 50 women, Haley [16] determined that the mean range of internal rotation in the sitting position was 40 per cent greater than it was in the supine position. It was pointed out that the iliofemoral ligament is taut in extension and limits rotation. In a related study Jarvis [17] found that the inward rotators exert significantly greater force when the hip is flexed than when it is extended. The explanation for this variation was that the line of pull of the principal muscles of inward rotation is much more advantageous when the hip is flexed than when it is extended and the maximum tension of the muscles is applied more effectively to the femur in this position. Thus, there are important differences between the two tests in the range of motion and also in the force which may be expected. Sitting allows greater range and strength of hip inward rotation, so that a test performed in the sitting position might yield a higher grade than one in the supine position.

METHODS OF APPLYING MANUAL RESISTANCE

A factor in reliability of manual muscle testing is whether a "break" test is used, in which the examiner attempts to overcome a fixed position of the joint, or another type of pressure is applied to the segment to evaluate muscle strength—resistance may be given throughout the test movement or the patient may push against a fixed resistance (isometric test). Studies show that "break" force readings are higher than those from other procedures.[18, 19, 20] Stutzman [18] also pointed out that the percentage difference between "break" and isometric testing methods is greatest when the muscle groups are approaching their shortened state. This is significant since muscles are usually tested at the end of their range of contraction.

The question, "Do you use the 'break' test in all cases?" resulted in the following information: 38 (73 per cent) answered in the affirmative; however, 3 of these persons named as exceptions the tests for the calf group, the latissimus dorsi, and normal abdominal muscles. Ten (19 per cent) replied in the negative. Two used both the "break" and the isometric methods and two did not respond to the question.

SUMMARY

It was determined by questionnaire survey of 52 physical therapists that differences existed in manual testing methods of 11 muscles and muscle groups for study. Six of these are included in the present report: anterior deltoid, middle and lower trapezius, serratus anterior, tensor fascia lata, and internal hip rotators. Basic kinesiological considerations have been reviewed relative to differences in positioning, direction of the test movement, and application of manual resistance in giving the tests. No attempt has been made to evaluate test procedures but merely to point out factors significant in comparison of grades.

REFERENCES

1. Lovett, R. W.: The Treatment of Infantile Paralysis, Philadelphia, P. Blakiston Co., 1916.
2. Legg, A. T. and Merrill, J. B.: Physical therapy in infantile paralysis, reprinted from Principles and Practices of Physical Therapy, (edited by Mock, Pemberton, and Coulter) Hagerstown, Md., W. F. Prior Co., Inc., P. 44-74, 1932.
3. Brunnstrom, S.: "Muscle group testing," Physiotherapy Rev., 21:3-22, 1941.
4. Daniels, L., Williams, M., and Worthington, C.: Muscle Testing, Techniques of Manual Examination, Philadelphia, W. B. Saunders, 1946.
5. Kendall, H. O. and Kendall, F. P.: Care During the Recovery Period in Paralytic Poliomyelitis, U.S. Public Health Bull. No. 242, U.S. Government Printing Office, Washington, D.C., 1939.
6. Duchenne, G. B.: Physiology of Motion, (translated and edited by E. B. Kaplan), Philadelphia, J. B. Lippincott Company, 1867.
7. Wright, W.: Muscle Function, New York, P. B. Hoeber, Inc., 1928.
8. Inman, V. T., Saunders, J. B. and Abbott, L. C.: Observations on the function of the shoulder joint, J. Bone Surg., 26:1-30, 1944.
9. Kendall, H. O. and Kendall, F. P.: Muscles, Testing and Function, Baltimore, Williams & Wilkins Co., 1949.
10. Brunnstrom, S.: Comparative strength of muscles with similar function. A study of peripheral nerve injuries to the upper extremity, Physiotherapy Rev., 26:39-65, 1946.
11. Brunnstrom, S.: Muscle testing around the shoulder girdle, J. Bone Surg., 23:263-272, 1941.
12. Last, R. J.: Anatomy, Regional and Applied, Boston, Little, Brown and Co., 1954.
13. Mulliner, M. R.: Elementary Anatomy and Physiology, Ed. 4, Philadelphia, Lea and Febiger Co., 1938.
14. Williams, M. and Wesley, W.: Hip rotation action of the adductor longus muscle, Phys. Ther. Rev. 31:1-3, 1951.
15. Steindler, A.: Mechanics of Normal and Pathological Locomotion in Man, Springfield, Ill., Charles C Thomas Co., 1935.
16. Haley, E. T.: Range of hip rotation and torque of hip rotator muscle groups, Am. J. Phys. M., 32:261-270, 1953.
17. Jarvis, D. K.: Relative strength of the hip rotator muscle groups, Phys. Ther. Rev., 32:500-503, 1952.

18. Stutzman, L.: A comparison of 'break' and isometric muscle test values. Unpublished Master's thesis, Stanford University.
19. Darwin, N. M.: Performance of the finger flexor muscles. Phys. Ther. Rev., 31:433-436, 1951.
20. Williams, M.: Manual muscle testing, development and current use. Second Congress Proceedings, World Confederation for Physical Therapy, 1956.

EDITOR'S NOTE: The Editorial Board invites comments upon the variations occurring in the methods currently used by 52 physical therapists. If uniform methods are desirable, how can standardization be achieved?

Case Reports

Pathological Dermographism in an Amputee

George H. Hassard, M.D., and Muriel McGlamery, B.S.

A 45 year old white male prison guard was admitted July, 1958, to the Physical Medicine and Rehabilitation ward for fitting of an above-knee prosthesis and training in its use.

In November, 1944, this man was running toward a gun emplacement nest after dark while carrying a heavy machine gun tripod. He stepped into a hole with his right leg, felt immediate pain in the knee but heard no popping sound. After extracting himself from the hole, he could not straighten the knee and he bore weight with difficulty. In a matter of hours, swelling of the knee was so great that his trouser leg became tight. A positive drawer sign indicating femoral displacement and insufficiency of the cruciate and collateral ligaments was noted but bony X-rays were negative for pathology. Treatment consisted of wrapping, aspiration, taping, and analgesics. (The drawer sign is elicited by having the patient lie on the examining table with knee flexed at 90 degrees and foot resting flat on the table; the examiner grasps the lower leg with one hand in the popliteal fossa and the other hand around the ankle. He stabilizes the ankle and pulls forward on the head of the tibia and fibula as though opening a drawer. This tests for joint stability, with reference to the cruciates, primarily, but also collateral ligaments.)

Two months later, he was sent to Letterman General Hospital for orthopedic and physical therapeutic attention. Surgery was not indicated; he was fitted with a long leg brace and was medically discharged from the Army with 30 per cent disability. He wore the brace with periodic revisions and admissions to Veterans Administration Hospitals for nine years, but pain, swelling, and subsequent interference with job and social activities were termed annoying to critical.

From the Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

In February, 1955, an operation was performed whereby the medial meniscus was removed. The medial collateral and anterior cruciate ligaments were repaired and shortened. A cast was applied and six weeks later was removed. On his first weight-bearing step the femur again overrode.

The next two years were stormy. The saphenous vein became thrombosed and a stripping operation was necessary in October, 1956. Pain was unrelenting. An arthrodesis of the knee was performed in November, 1956; the fusion held but the pain persisted. Infection followed; the operative area was drained of chocolate colored substance five times and twice the incisional area was resutured. The patient lost weight, decreasing from 217 to 143 pounds.

In January, 1958, an above-knee amputation was performed; in March, 1958, the stump was reopened, debrided and closed with wire sutures. This healed uneventfully and he was transferred to the Physical Medicine and Rehabilitation Ward in June, 1958.

The patient harbored no sequelae from the usual childhood diseases; he had undergone an appendectomy and a tonsillectomy in childhood but no unusual diseases had been experienced. He sustained fractures of nose and left radius in college football. He was on no medication, had no known chronic diseases or allergies. There were no familial allergies or disease tendencies. He stated that he always felt very anxious, perspired freely, and his heart pounded when undergoing physical examinations or seeing a doctor professionally. In his voluminous case files it is mentioned that he appeared to have a low pain threshold and that incongruities were apparent in relation to complaints of disability when comparing him to other patients with similar pathology. With each hospitalization in Veterans Administration hospitals complete medical workups had been performed; laboratory tests and X rays, both general and of the stump, were satisfactory.

A suction socket prothesis was issued July, 1958. The use of this caused stump burning, stinging, swelling, edema, and bluish erythema, but no numbness or sharp lancinating pain. The edema and

Figure 1. Dermographia 30 minutes after stroking. Traces of edema and erythema were present after 36 hours.

bluish erythema were apparent at the medial-distal aspect of the stump and to a lesser degree over the ischioramus weight-bearing area. Ice bags afforded relief but periods of gait training were too brief because he could tolerate the prosthesis for only short periods of time. After numerous fittings were unsuccessful in relieving the signs, a conventional prosthesis was fitted in August, 1958. The same symptoms and signs occurred. Erythema without edema resulted from wearing the pelvic belt.

An accidental scratch on the skin of the mid-back while at physical therapy caused a sharp wheal with red peripheral flushing. Subsequent tests showed him to have a pathological dermographism as illustrated in figure 1. This was differentiated from pressure urticaria, figures 2 and 3, stump edema syndrome, figure 4, and allergies of systemic, contact irritant, and cutaneous sensitivity types. Dermatological consultation reiterated our diagnosis of factitious urticaria and no allergy of any type was found except an over-reaction to ant bites. The dermatology service assisted in strict supervision of stump skin hygiene during the patient's hospital stay. Medical consultants, while arriving at our diagnosis, ruled out hypothyroidism, renal pathology, collagen disorder, poor circulatory supply or return from stump and capillary fragility, as well as the more distant differential possibilities. Psychiatric consultation summarized their studies by stating, "No serious pathology indicated. This is a somewhat inhibited person who is functioning on an adequate level of efficiency. He seems to be making adequate psychological adjustment to his handicap."

Figure 2. Differentiating pressure urticaria from dermographism by the Urbach-Gottlieb test. In this case, the test was negative.

Figure 3. An alternate site for application of Urbach-Gottlieb test.

We continued to wrap the stump in a tight cone of elastic bandage prior to gait training and used ice packs following the session. Corticosteroids were given orally for 10 days but no effect was apparent. A 2.5 per cent cortisone topical ointment was applied but again no appreciable improvement was noted over the area. Iontophoresis of Pyribenzamine® in conjunction with oral doses were equivocally effective, although our dosage was perhaps low. However, with high doses of long acting antihistamine Perazil®, the symptoms and signs gradually subsided.

The patient was dismissed October, 1958. He reports no unusual edema, redness, or burning and he wears the prosthesis daily, sometimes 16 hours per day. He gradually reduced the dosage of Perazil® and is now entirely off the drug.

COMMENT

Dermographism is a pathological exaggeration of a physiological response to mechanical stimuli. The "triple response" to deep skin stroking; i.e., white

turning turning to red line reaction, flare reaction, and wheal reaction is normal for a matter of minutes. The delineation of pathological and physiological autographism is difficult. However, this case is deemed pathological because it meets the criteria: 1. Time factor (after 36 hours the wheal was still present). 2. Interference with normal body activity (unable to use prosthesis).

It is possible that dermographism may be responsible for swelling of the hands after long sessions of gripping the stall or parallel bars, lawn mower handles, and automobile steering wheels, swelling of soles of the feet after long hours of walking on concrete, or reactions to tight shoulder straps.

We reviewed medical literature since 1946 and found no recorded cases of dermographism in an amputee which affected the use of his prosthesis. There were several cases reported in which dermographism caused the patient to change jobs or interdict pursuit of certain activities or hobbies. However, we could not prescribe the "avoidance" treatment—we wanted our patient to walk.

The *Review* invites case reports from physical therapists who have followed an interesting course of treatment with or an unusual response

(continued on page 481)

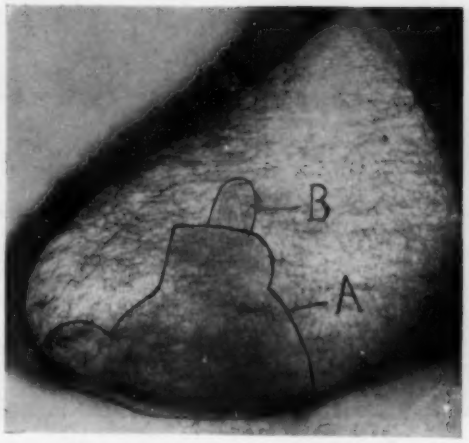

Figure 4. Differentiating stump edema syndrome from dermographism.

A. Area of edema following 2 hours of wearing prosthesis.

B. Stroked area which shows edema from mechanical stimuli.

Suggestions from the Field

Leg Treatment Table

Margret Volle, B.S.

IMPROVISED EQUIPMENT AIDS FOR HOME TREATMENT

Improvised equipment serves a real purpose in supplementing the physical therapy treatment given in the home. It is often developed through a cooperative working relationship with the family—such as a suggestion from the physical therapist, which is then carried out to its completion by a family member. Some of these developments which have been used to advantage by the Milwaukee Visiting Nurse Association home service may be of interest. This is the second of several that will appear in future issues of the *Review*.

Figures 1-a, 1-b and 1-c, show a triangular platform which is useful in teaching the diagonal movements of the proprioceptive neuromuscular facilitation technics to a mother or nurse in the home. The platform is usually placed on the kitchen or dining table (See fig. 1). This development grew out of a need in teaching one mother in the home, and later proved to be a help to numerous other parents in grasping more quickly the basic patterns for the lower extremity.

Further use of the platform is also made in teaching these same basic spiral diagonal patterns of motion to our staff nurses in each of the three offices within this County. This is a part of their preparation in helping to extend the physical therapy services to many chronic patients in the County where there is inadequate family attendant help. Each staff nurse receives further guidance and help from the physical therapist on individual cases.

By starting both the flexion abduction and the extension abduction patterns for the lower extremity from the same position of adduction and external rotation in the hip and extension of the knee, it is not too difficult for the mother to learn these basic patterns with one or two return demonstrations. Starting toward the flexion abduction pattern seen in figure 1-a, the slanted platform is placed laterally to the leg to be exercised. This gives the patient a feel for the gradual angle of elevation which the leg is to take. As the flexion abduction movement is begun upward on the 45 degree angle of the board, the mother is instructed to say "kick" as she initiates a rolling motion in the hip from a starting position of

Nurse, Physical Therapist, Physical Therapy Coordinator of the Visiting Nurse Association of Milwaukee.

Figure 1-a. Completion of the flexion abduction pattern with major emphasis toward hip strengthening carried out by mother and child in daily sessions at home.

Figure 1-b. Completion of the flexion adduction pattern with major emphasis on increasing the range of motion without painful stretching. Mother is guiding hip rotation of the child's active pull up and in, with a functional approach.

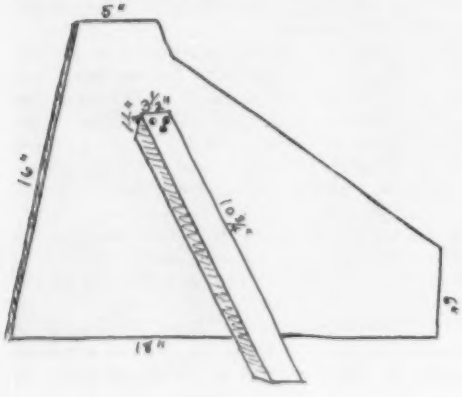

Figure 1-c. Back view of triangular slanting platform stabilized at a 45 degree angle. The wooden support is attached to the Masonite platform by three nails.

down and *in*, or extension and adduction with external rotation of the hip, to a finish of *up* or *out*, or flexion and abduction with internal rotation of the hip at the completion of the range. This then involves a spiral diagonal pattern of movement in the hip, and offers a stretch stimulus to the weaker hip abductor muscles when the flexion abduction pattern is initiated from a position of extension adduction. The mother's hands need to give more detailed guidance to the foot if this is also an area of weakness. This involves more teaching help from the physical therapist, with added visits to the home.

Starting toward flexion adduction, the pattern follows similarly with a necessary change in placement of the slanted platform medially between the child's legs, as seen in figure 1-b. This, then allows for the same spiral diagonal pattern starting from *down* and *out*, or extension and abduction with internal rotation in the hip, to *up* and *in*, or flexion and adduction with external rotation of the hip and inversion and dorsiflexion of the foot, at the completion of the movement, as seen in figure 1-b. Emphasis is here being placed on the child's active participation in reaching diagonally toward the big toe, which gives the pattern a functional approach, and helps to stretch the tight hamstring actively without resistance or pain.

CONSTRUCTION

The platform base seen in figure 1-c is made from ⅛ inch Masonite, purchased at a lumber company, which offers a smooth sliding surface. This can also be made of ¼ inch thickness if more stability is desired. The measurements as pictured are suitable for use on the lower extremity of a child age 3 to 6 years. The triangular shape and 45 degree angle slant were chosen to meet the average need of a platform base for the diagonal patterns. All corners were carefully rounded and sanded to avoid any injury to the leg in motion on its surface. A wooden support, cut on the proper slant and nailed (with three nails) to the back, stabilizes the platform.

The K-B Universal Sling

Josph M. Breuer, M.A., and
William D. Kamper, B.S.

It has been clinically shown that arm slings are usually prescribed for conditions involving subluxation of the shoulder joint with or without concomitant pain. To maintain a "normal" shoulder position with the head of the humerus kept in place has been the purpose of all slings and sling devices in treating hemiplegics. To date, various slings known to the authors and tested by them have not been completely satisfactory.

Almost all slings privately devised or commercially available cradle the elbow and forearm by suspension from one or both shoulders or the neck. The triangular sling most commonly used presents extreme disadvantages in attempts to reduce or prevent shoulder subluxation. The triangular sling does not stay in place and only temporarily keeps the head of the humerus in the glenoid fossa. The main support is nearer the wrist than the elbow and the strain is borne largely by the affected shoulder.

Many sling devices incorporate some of the features of the K-B sling but are not entirely free of the disadvantages mentioned. Many attempt to remove the stress from the affected shoulder, but as long as the forearm is cradled, permitting

Figure 1.

From the Bird S. Coler Hospital, New York, N. Y.
Joseph M. Breuer, Chief Physical Therapist, Department of Physical Medicine and Rehabilitation; William B. Kamper, Occupational Therapist.

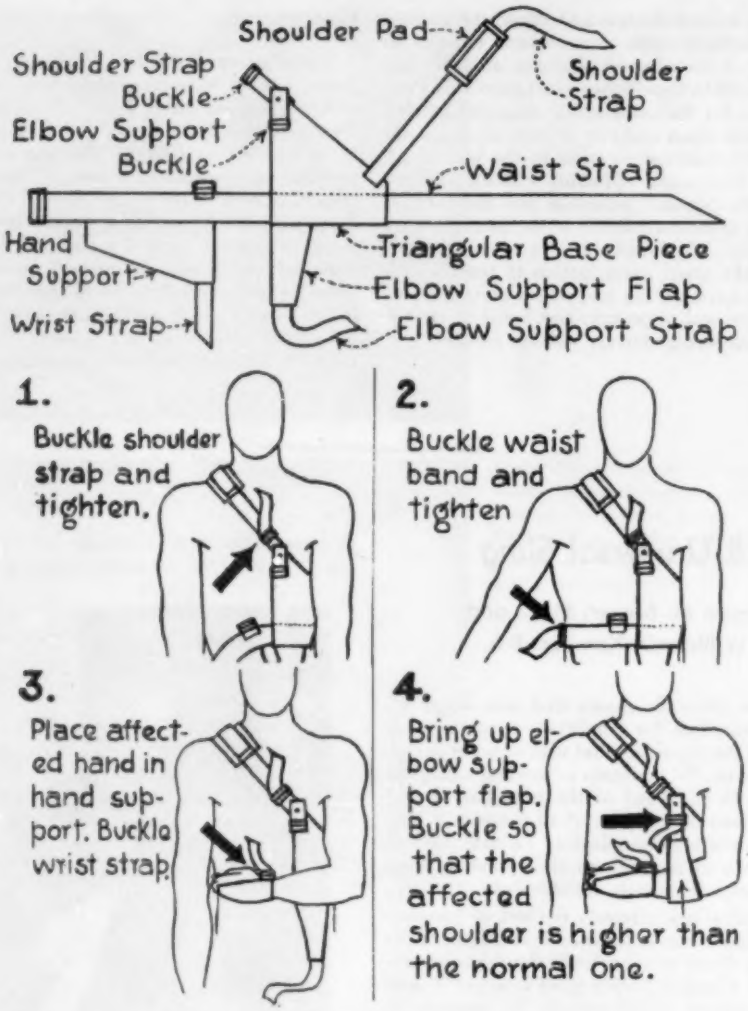

Figure 2.

a movement, however slight, of the sling around the neck, the purpose of preventing or reducing dislocation is defeated. To solve this problem, the authors devised and tested a sling which would overcome this difficulty.

The K-B sling operates on an entirely different principle. Instead of suspending the affected extremity from the shoulders, the sling uses the forearm as a lever with the fulcrum at the wrist and pushes the elbow, hence the shoulder, into its natural position. Not only can this reduction of dislocation of the joint be maintained for any length of time, but no stress is brought to bear on the affected side. This is because the weight of the paralyzed arm is supported entirely by the unaffected shoulder and the waist band.

The K-B sling is presented as a universal sling; by turning it inside out, it can be used by right or left hemiplegics. The buckles are of the friction type and are functional from the front on either side. The adjustable shoulder and waist belts permit use of the sling by patients of widely vary-

ing heights and weights. Finally, the waist belt slides through the triangular base section accomodating forearms of any length (Fig. 1).

As explained by the diagram, the K-B sling is put on in four simple steps, as follows:

1. The shoulder strap is brought over the unaffected shoulder and fastened to the inner buckle of the triangular base piece. (NOTE: there are two buckles riveted to the top corner of the triangular base piece; the inner buckle is brought up to meet the shoulder strap, and the outer is turned down to join with the elbow flap.)
2. The waist band is now buckled in place slightly above the line of the forearm.
3. At this point, the hand is placed in the hand support and the wrist strap buckled. The hand should be placed flat against the abdomen, if possible.
4. Finally, the elbow flap is brought up and buckled so that the affected shoulder is slightly higher than the normal one. At this time the reversible shoulder pad should be adjusted.

In removing the sling, only the wrist, elbow, and waist straps should be unbuckled. The shoulder strap should remain buckled so that less adjustment is necessary when the sling is put on again.

In testing, a feeling of discomfort has been expressed by some patients, but these patients had been using ineffectual cradling slings or none at all. The K-B sling has been tested on right and left hemiplegics, males and females of varying physiques, and it has been found that the sling keeps the head of the humerus in the joint during the course of an ordinary hospital day.

Index to Current Literature

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Electromyographic Composition of Poliomyelitis-Injured Muscle. Ernest F. Adams and G. Clinton Knowlton, Arch. Phys. M., 40: 99-104, March 1959

Epidemiology of Poliomyelitis. G. W. A. Dick, Brit. M. J., 5122: 618-619, March 7, 1959

Management of Poliomyelitis. W. Ritchie Russell, Brit. M. J., 5122: 613-615, March 7, 1959

Persistence of Poliomyelitis Antibodies After Primary Immunization. Randolf Batson, Amos Christie, Dorothy Turner, Mary Michal and Jewell H. Barrick, Pediatrics, 23: 550-552, March 1959

Some Diagnostic Problems Surrounding Poliomyelitis. J. F. Galpine, Brit. M. J., 5122: 616-618, March 7, 1959

The Present Position of Immunization against Poliomyelitis with Live Virus Vaccine. Albert B. Sabin, Brit. M. J., 5123: 663-680, March 14, 1959

The Short Leg in Poliomyelitis. A. H. C. Ratliff, J. Bone Surg., Brit. Vol., 41-B: 56-69, February 1959

PSYCHIATRY

Attitude Study of Parents with Retarded Children. Richard Koch, Betty V. Graliker, Russel Sands and Arthur H. Parmalee, Pediatrics, 23: 582-584, March 1959

Emotional Factors Involved in Serious Illness. Franklin G. Ebaugh, South. M J., 55: 152-156, March 1959

RESPIRATION

A Simple Portable Aid to Respiration. James Macrae, R. V. Walley and H. K. Lucas, Lancet, Lond., 1: 452, Feb. 28, 1959

Mechanics of Respiration in Bronchial Asthma. Roe E. Wells, Jr., Am. J. Med., 26: 384-393, March 1959

Respiratory Physiology and Skin Diving. Robert W. Keast, J. Am. M. Ass., 169: 1419-1423, March 28, 1959

MISCELLANEOUS

Absorption and Utility of Lobeline as a Smoking Deterrent. G. W. Rapp, Bernard T. Dusza and Lois Blanchett, Am. J. M. Sci., 237: 287-292, March 1959

Hypnosis as an Adjunct to Anesthesia in Children. Milton J. Marmer, A. M. A. J. Dis. Child., 97: 314-317, March 1959

The Early Detection of Musculoskeletal Disorders. Frederick Lee Liebolt, Postgrad. M., 25: 131-135, February 1959

The Science Writer and the Doctor. Frank Carey, Mil. M., 124: 175-180, March 1959

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to treatment by patients having one of the conditions listed below.

Raynaud's disease
Scleroderma
Dermatomyositis
Alteration of patterned movement following tenotomy
Alteration of patterned movement following tendon transference
Tic douloureux
Emphysema
Myocardial infarction
Traumatic facial nerve paralysis with postoperative repair

NOTE: Suggestions for preparation of case reports were published in the October 1957 issue of the *Review*, pages 666-667. Reprints of the suggestions may be requested by writing to the *Physical Therapy Review*.

Editorial

Physical Therapist—Physician Interrelationships

Ethics for the Physical Therapist of the American Physical Therapy Association embody principles which are at once moral and ethical. As a guide to our professional conduct, our Code of Ethics states the responsibilities of the physical therapist to the physician, the patient, co-workers, employers, the profession, and the professional organization. Our Code is formed upon fundamental principles of right conduct rather than on enactment or custom.

In the beginning, during World War I, the physical therapists who became the founders of our professional group were termed reconstruction aides. Several years after our Association was founded in 1921 we were for a time known as physiotherapists. When the anglicized term, physical therapy, was adopted, we became physical therapy technicians. At present we are physical therapists. Whatever terminology has been used in naming or re-naming our professional group, we have always been guided by principles closely related to the Principles of Medical Ethics of the American Medical Association and have constantly striven for improved care of the patient.

Our Code of Ethics delineates our responsibility to the physician. Our profession has reviewed and revised the wording of our Code of Ethics from time to time. In 1957 we adopted revisions which may be said to include more specific guides to the ethical practice of physical therapy. We have proceeded from a set of general principles toward more detailed "shalls" and "shall nots."

Just as we attempt to provide an honest and reasonable code which requires revision according to the growth and development of the profession, so has the medical profession found it necessary to revise and reword the ethical principles which are binding upon the physician. The medical profession, too, proceeded from statements of general principles in the past to more specific guidelines in more recent years. In 1954 the Principles of Medical Ethics contained 47 sections bearing upon the physician's relationships with patients, other physicians, and the public. In 1954 only one allied medical group, the pharmacists, was mentioned in the medical code. In 1957, however, the Preamble to the Principles of Medical

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Ethics as proposed to the House of Delegates of the A.M.A. included this statement. "These principles are intended to aid physicians individually and collectively in maintaining a high level of ethical conduct. They are not laws but standards by which a physician may determine the propriety of his conduct in his relationship with patients, with colleagues, with members of allied professions, and with the public." A historical review of the Principles of Medical Ethics would be necessary to determine if the inclusion of "allied medical professions" existed at any time prior to 1957. The revisions as adopted are to be found in the July 27, 1957 issue of the *Journal of the American Medical Association*, page 1482. It would be well for all physical therapists to seek out and study the Principles of Medical Ethics in order to better understand the guidelines given to physicians by their own professional group.

The present trend of the American Medical Association in outlining principles of ethics seems to lead to statement of general rather than specific principles. It will be interesting to note if in the future our profession arrives at a statement of general principles as the A.M.A. has done. In our present stage of development as a profession we are certainly tending toward specific guidelines of ethical conduct.

Through the years since 1921 our Association has published several articles on the subject of ethics and professional interrelationships. Among these articles is one by Helen Hardenbergh, M.D., then Acting Professor of Physical Therapy at Stanford University, published in the September-October 1946 issue of the *Physiotherapy Review*. Dr. Hardenbergh wrote of ethics for the physical therapist from the point of view of the medical practitioner. Dr. Hardenbergh's article is still timely. She advised physical therapists to acqaint themselves with the professional ethics of physicians in order to clarify our "understanding of the physician-patient relationship, the ramifications of which determine to a great extent the essential elements of the physician-physical therapist relationship." Dr. Hardenbergh wrote, "Probably the actual prescription for treatment gives rise to more problems than any other phase of practice. Common sense, high standards of professional performance and mutual consideration between the physician and the physical therapist comprise a potent triumvirate of solution." Dr. Hardenbergh discussing further the matter of prescriptions said, "If for any reason the prescription seems inappropriate to the patient, discuss the matter with his physician, or with the physiatrist if there is one in charge, before initiating treatment. It is the tone and content of this discussion which will largely determine the character of the physician-physical therapist relationship. It is well to be reminded that physical therapy as an accepted adjunct to the medical armamentarium is relatively new. It is rapidly becoming a highly specialized field in which the ultimate function of the physical therapist is the administration of the technical aspects of treatment. It is certainly factual and fair to state that many medical prac-

Editorial

titioners are not conversant with the details of technic. As is the case with innumerable allied medical specialties, the physician must and does rely upon the physical therapist's specific training and knowledge. The understanding and acceptance of mutual responsibility to each other and to the patient is the essence of coordinated therapeutic effort. It is both inappropriate and professionally devastating for either the physician or the physical therapist to assume an uncooperative, empirical, or smugly superior attitude in any matter which concerns the welfare of the patient."

Dr. Hardenbergh recognized that more than strict adherence to the Code of Ethics is necessary to good relationships. Developing and maintaining constant relationships with referring physicians may partially depend upon the physical therapist's understanding of the body of knowledge which physical therapy encompasses so that he may intelligently interpret and follow the physician's prescriptoin. Relationships may also depend upon the physical therapist's ability to communicate through oral and written expression for without communication knowledge may be useless.

It is interesting to note that thirteen years ago Dr. Hardenbergh's closing comments were "Remember also that, as professions go, physical therapy is young, very young—not an infant but perhaps an adolescent where problems multiply with alarming rapidity. You are in a difficult and challenging developmental period, a period through which no doubt you will pass with some turbulence to emerge and claim the integrated majority you well deserve. In the meantime there will be problems which, though clamoring to be solved, despair of solution. These are growing pains. Attend them but do not be confused by their vagaries. Certainly the road ahead will be made smoother and straighter by individual and group establishment of and earnest adherence to an honest, a reasonable, an intelligent, and an idealistic code of ethics."

That irreproachable ethical conduct leads to professional recognition in spite of periods of "turbulence" and "growing pains" was implied by Dr. Hardenbergh. Beyond the physical therapist's relationships with physicians in the care of the patient, there are necessarily relationships between physical therapists as a group and physicians as a group. These relationships were first achieved when our professional organization was born; we have maintained liaison with physician groups throughout the years. Although it is not difficult to maintain "patient-centered" relationships in the care of patients, to maintain "patient-centered" relationships on the group level becomes a challenge. This challenge must be and is accepted by our Association. Meeting the challenge in a way which will best serve patients, physicians, and physical therapists requires that, individually and collectively, we are vigilant of and support attitudes which are "patient-centered"—even though matters of major concern to our professional group may be the "center" of interest.

DOROTHY E. VOSS
Editor-in-Chief

Association News

Marriages

Dee Beebee, of Aurora, Ill., to John T. Boyd, Long Beach, Calif.

Hazel Boyne, of Ferndale, Mich., now Mrs. Hazel B. Erickson, Ferndale.

Leona Carney, of West Roxbury, Mass., now Mrs. Leona C. DeGraff, West Roxbury.

Leota A. Desonia, of Virginia, Minn., now Mrs. Leota D. Hanson, Virginia.

Mary W. Dreier, of Vero Beach, Fla., to Paul D. Holleman, Denver, Colo.

Irene Gerlach, of Lodi, Calif., now Mrs. Irene G. Alway, Stockton, Calif.

Ruth Hill, of Minneapolis, Minn., now Mrs. Ruth H. Nevels, Minneapolis.

Janet Holdon, of Andover, Mass., now Mrs. Janet H. Hathaway, Andover.

Maureen Jeffrey, of New York, N.Y., to Ernest Schaurer, New York.

Patricia Riley, of Durango, Colo., to C. Dennis Irwin, Durango.

Gladys Ripczinski, of Minneapolis, Minn., now Mrs. Gladys R. Lorenz, Minneapolis.

Acting Executive Director Appointed

The Executive Committee of the American Physical Therapy Association regrets to announce the resignation of Annetta Cornell Wood as Executive Director of the Association. Lucy Blair, who since 1950 has held several positions in the National Office of the Association, is now serving as Acting Executive Director.

New Law Affects New York Licensed Physical Therapists

Appropriate amendments to the Education Law under which physical therapists are licensed in the State of New York became law in April. The revision provides for a grievance committee composed of eight physical therapists, whereas previously, there were no physical therapists serving on the existing medical grievance committee. The committee will hear all charges and conduct proceedings against any licensed physical therapist of the state for reported violation of the existing Education Law, that includes provisions for the revocation and annulment of licenses. While the amendments as enacted do not alter the present procedure for issuance of licenses to physical therapists, for the first time physical therapists in New York will have an official role in the administration of the law.

Physical Therapy Legislation in Colorado

Colorado Governor Stephen L. R. McNichols presenting signed bill to Irene Wilson, President, and Katharine Chilcote, Chairman of the Legislative Committee of the Colorado Chapter, American Physical Therapy Association.

Colorado became the thirty-fifth state to regulate the practice of physical therapy when on May 19, 1959, Governor S. L. R. McNichols signed into law a bill providing for mandatory licensure of physical therapists. No person may practice nor hold himself out as being able to practice physical therapy unless he is licensed according to law. The new law further provides for creation of a State Board of Physical Therapy to be composed of three physical therapists who meet the requirements prescribed by the law.

California Registration Law Amended

Assembly Bill No. 11, providing for physical therapists who are eligible for registration to work prior to completing the examination, was

signed into law in March 1959. The amendments to chapter 5.6 of the Business and Professions Code became effective immediately.

Physical Therapy Legislation in North Dakota

On March 17, 1959, North Dakota became the thirty-third state to regulate the practice of physical therapy by Governor John E. Davis' signature on Senate Bill No. 126. The new law provides for creation of a State Examining Committee of Physical Therapists to assist the State Board of Medical Examiners in carrying out the provisions of the law, regarding the qualification and examination of physical therapists. The Committee is to be composed of five members, three of whom shall be physical therapists and two of whom shall be licensed and registered doctors of medicine. The law states—that it shall be unlawful for any person to practice physical therapy or hold himself out as a physical therapist unless he has been duly registered in the state by Jan. 31, 1960.

Physical Therapy Legislation in Oregon

Oregon became the 34th state to enact legislation regulating the practice of physical therapy when Governor Mark O. Hatfield signed the bill into law on May 14. The new law provides for creation of a Physical Therapy Advisory Committee of four members to assist the Board of Medical Examiners in the administration of the law. An endorsement provision permits a physical therapist licensed or registered under the laws of any other state or territory to be granted registration without examination providing the requirements of the state or territory were substantially equal on the date of application.

Chapter News

Arizona

The members in the Tucson area have recovered from the hard but rewarding work of an "Open House" held at St. Mary's Hospital. The Mayor of Tucson proclaimed March 7, 1959, Physical Therapy Day, in honor of the event. The program was opened by a local leading physician speaking on the importance of physical therapy in the treatment and rehabilitation of the handicapped. Four physical therapists were assisted by a university student and a high school junior in a lively panel discussion. The 60 guests were given an opportunity to see the physical therapy department where "live" demonstrations of the equipment and technics had been set up. The refreshments period provided additional time for questions and answers.

Alabama

A booth on physical therapy was the Chapter project for May when the members were invited to participate in the Birmingham Health Fair.

California — San Diego

The Chapter was host to the other California Chapters at the annual weekend meeting in April. The general theme of the program was "Geriatrics."

California — San Joaquin Valley

The newsletter now has a name: *Joaquin—Talking.*

Delaware

Disaster Planning was the topic for consideration at the April meeting of the Chapter. E. Jane Carlin, Pennsylvania Chapter member, was invited to be the speaker for this program.

Iowa

The Chapter has been conducting a large scale recruitment program. At the April meetings of the Iowa State Medical Society and the Iowa Hospital Association, Chapter volunteers manned an informational and educational booth. Distribution of career literature went to physicians, hospital administrators, medical librarians and medical accountants, and the general public.

Massachusetts

An "Honor Roll" was published in a recent newsletter. This was a public "thank you" to those who had contributed to the Chapter's recruitment program throughout the year. The listening included members' names and the places of their public appearance on behalf of the profession.

Western Missouri

A meeting arranged in connection with a local producer of orthopedic and prosthetic appliances provided the Chapter with a stimulating seminar program. Demonstrations of new developments and technics in limb fittings; methods of developing the proper gait; harnessing upper extremities; corsets foundations and braces used and fittings, were among the items presented to the therapists.

New York

In announcing the agenda for the annual meeting, under Election of Officers and Directors:

> "Are you of voting age or close to it? Come and vote!!!"

Pennsylvania — Western District

A day and a half "Geriatric Seminar on the Problems of the Aging," planned by the District, was held at the new John J. Kane Hospital, Pittsburgh, in May. The problem was discussed from the following approaches: Medical, psychological, social and economics, nursing, nutritional, employment possibilities, home programs, nursing homes, physical therapy, and comprehensive institutional care.

New Student Members

College of Medical Evangelists

Gerald D. Brayshaw	Victoria M. Jennings
William J. Browne	William E. McFarlane
Rita Dedeker	Calvin B. McIlwain
Felix I. Drapiza	Fern Rasmussen
Bettye Galloway	Carroll B. Rayburn
Edith L. Green	Tracy Shantz
Charles W. Habenicht	Victor A. Sossong
Edward L. Haffner	Charles R. Stafford
Marilyn J. Harper	Donald Stragier
Richard Harrison	Theodore T. Tagawa
Marvin Hubbs	Edward T. Vogel
Donald J. Johnston	George C. Walters, Jr.

Wilton L. Wynn

New York University

Sheila Krigsner

Stanford University

Olive N. Tepley

University of Connecticut

John Silk

University of Minnesota

Ruth E. Peters — Carol P. Robinson

University of North Carolina

Shirley K. Cloninger — Martha J. Downs
Calla A. Bolen — S. Virginia Marston
Linda C. Moore

University of Wisconsin

Joanne Greengard — Jean A. Kristy

(From left to right) John W. LaValley, taking the oath of office, Mrs. LaValley, and Lt. Col. Ralph D. Arnold, Executive Officer First U.S. Army Medical Section.

Member Commissioned

John W. LaValley, a member of the Association, was commissioned a first lieutenant in the Army Medical Specialist Corps on April 24, 1959. Prior to his assignment to Brooke Army Hospital, Fort Sam Houston, Texas, Lieutenant LaValley was a member of the physical therapy staff at the Institute of Physical Medicine and Rehabilitation, New York. He received his physical therapy certificate in June, 1958, at New York University.

Navy Recruits Physical Therapists

The Navy Recruiting Service is now authorized to recruit fully qualified physical therapists (women) for appointment and active duty in the grade of Ensign, Women's Specialists Section, Medical Service Corps, U. S. Naval Reserve.

Applications are also being accepted from physical therapy students for consideration for appointment as Reserve officers in the grade of Ensign in the Medical Service Corps for active duty while completing their final year of training.

For information or submission of application, communicate with your nearest Office of Naval Officer Procurement. Additional information may also be obtained from the Chief, Medical Service Corps, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

Third Congress

World Confederation for Physical Therapy

Third International Congress—Sunday, Sept. 6, 1959, to Saturday, Sept. 12, 1959.

Place of the Congress—The Congress will be held at the Nouvelle Faculté de Medécine, 45 Rue des Saints Péres, Paris VI^{e}, France.

Attendance—The Congress is open to all members of the American Physical Therapy Association.

Opening Ceremony—The opening Ceremony will be held in the famous Palais de Chaillot at 9 A.M. Monday, Sept. 7, 1959.

Theme—The theme of the Congress will be "Physical Therapy—Its Importance in Human Economic and Social Development" with emphasis on Neurology, Geriatrics, Orthopedic Surgery and Traumatology, Rheumatology, Heart and Chest Conditions, Aids and Prostheses, and Psychiatry.

Official Language—There will be simultaneous translation of the lectures and discussions in English, French, and German.

General Assembly—A meeting of the General Assembly of the World Confederation for Physical Therapy will be held during the Congress.

Congress Registration—Congress registration fees may be paid to the American Physical Therapy Association.

Full Members	$14.12
Social Associates	5.65
Student Members	4.23

Full Members are physical therapists, doctors and persons in allied medical fields. Social Associates are persons not eligible as, but accompanying, Full Members.

Final Plans are being completed to attend the Third Congress of the World Confederation for Physical Therapy in Paris during the week of Sept 6-12, 1959. The American Physical Therapy Association will have a fine representation.

The Chartered Society of Physiotherapy in Great Britain is anticipating the arrival of colleagues from overseas. Clinical visits in selected London hospitals are being scheduled. A party for overseas visitors is being planned between 6:00 and 7:30 P.M., on August 19 and September 28. Allow time for these important events and the opportunity to meet new friends and visit friends of long standing.

Additional details about professional visits and hospitality in London will be available at the National Office of the American Physical Therapy Association.

Additional Information

Details regarding chartered plane schedules, hotel accommodations in Paris, social events and dress may be found in the April and May, 1959 issues of the *Review*. For complete information on Pre- and Post-Congress courses that have been arranged in Great Britain, Denmark, Sweden and Western Germany refer to page 240 in the April issue.

Proprioceptive Neuromuscular Facilitation Film

A 35 minute color film with sound is available to chapters and schools of physical therapy at a rental fee of $10.00. One copy of the film has been given to the Association by the California Rehabilitation Center. Requests from states east of the Mississippi should be directed to the American Physical Therapy Association, 1790 Broadway, New York 19, New York; rental is payable to the American Physical Therapy Association. Those west of the Mississippi should write to California Rehabilitation Center, 2600 Alameda, Vallejo, California; rental is payable to the California Rehabilitation Center. All requests should be submitted two weeks in advance of date of showing. Alternate dates are desirable since both copies may have prior bookings.

Letters to the Editor

Dear Dr. Swinyard:

I read with interest and pleasure your Editorial entitled, "Reflections About Reflex Therapy in Cerebral Palsy," May, 1959. In my opinion, your thoughts on the need for a critical evaluation of some current therapeutic procedures are timely. While the technics employed may or may not be perfectly acceptable, we most certainly need assistance in understanding the rationale underlying the use of these methods. The OVR-APTA Institute this year should help to clarify many of these points. Good luck in your endeavors.

Sincerely yours,

SARA JANE HOUTZ

Windsor Locks, Conn.
May 25, 1959

Editor, *Physical Therapy Review*
American Physical Therapy Association
1790 Broadway
New York 19, New York

DEAR EDITOR:

I would like to convey my congratulations to Dr. Swinyard for his editorial in the May issue of the *Physical Therapy Review*. It was a graceful thump on the noggin to some of us who have been becoming overly pedantic about reflexes and engaging in all sorts of semantic nonsense and pseudo-physiological theorizing in order to sound erudite.

Many times I have wondered just how useful many of our physical therapy techniques and gadgets are, and how closely allied they are to vitamin pills, vibrators, tonics, and other placebos that work towards fooling a patient into feeling better.

As Dr. Swinyard suggested, the proof offered for many of the theories upon which physical therapists rely is too often based on uncontrolled studies. Knowing how statistics and reports can be slanted (often unwittingly) to fit preconceived opinions, I find myself being a constant skeptic. I ask myself why —if some of these high sounding theories have really proven their superiority or efficacy —they have not been made standard parts of the curriculum of physical therapy or even medical schools. In some cases there has certainly been time enough to develop proof— but evidently it was not convincing enough, or else it was too complex for many of us to appreciate, or could it be that some of our established ruts are too difficult to climb out of? Empirical data still makes up the greater proportion of the foundation of the practice of physical therapy and regardless of the honesty or objectivity of this data a reflective caution should precede its acceptance or rejection—by each individual. Even though we are not supposed to prescribe treatment measures our observations and opinions most probably play a determing role.

The complete lack of critical comment or argumentation about the various articles published in the *Review* indicates either a blind acceptance or a lethargic disinterest to all that is written. Possibly many of us are afraid of publicly expressing an honest opinion for fear of offending someone, or is it "stagefright" that holds us back? Whatever the reason, I hope some day soon to see the members of our profession engage in public argumentation, criticism, and even felicitations.

Very truly yours,

HAROLD GLICKLIN

Members' Publications

David C. Harkins is co-author with O. D. Carter, of "The Team Approach in the Rehabilitation of a Mentally Retarded Spastic Paraplegic" published in the *Journal of the Maine Medical Association*, April, 1959. Mr. Harkins is Director of Physical Therapy, Pineland Hospital and Training Center, Pownal, Maine.

Coming Meetings

July 4- 9 American Society of X-Ray Technicians, Shirley Savoy Hotel, Denver

Aug. 5-15 Second Annual Health Exposition, The Coliseum, New York City

International Meetings

July 27-31 First International Medical Conference on Mental Retardation, Eastland Hotel, Portland, Maine

Sept. 6-12 Third Congress, World Confederation for Physical Therapy, Nouvelle Faculté de Medicine, Paris

Sept. 7-11 World Medical Association, Queen Elizabeth Hotel, Montreal, Canada

Sept. 13-15 International College of Surgeons, North American Federation, Chicago

SHORT TERM COURSES FOR GRADUATE PHYSICAL THERAPISTS

Title of Course	*Sponsor of Course*	*For Details Contact*	*Dates of Course*
Cerebral Palsy	The North Carolina Cerebral Palsy Hospital Durham, North Carolina	Dr. Lenox D. Baker Medical Director No. Carolina C. P. Hosp. Durham, North Carolina	Courses arranged according to individual need—duration 3 months
Physical Therapy in the Care of Neuromuscular Disease	Georgia Warm Springs Foundation Warm Springs, Georgia	Robert L. Bennett, M.D. Medical Director Ga. Warm Springs Found. Warm Springs, Georgia	January April October
Postgraduate Course in Technics of Treatment	Children's Rehabilitation Institute for Cerebral Palsy Reisterstown, Maryland	Christopher H. Wiemer Executive Director Children's Rehab. Inst. Reisterstown, Maryland	July 6—Sept. 18, 1959 Oct. 5—Dec. 18, 1959
Technics of Neuromuscular Reeducation	California Rehabilitation Center Vallejo, California	Margaret Knott Chief P. T. Calif. Rehab. Center Vallejo, Calif.	January 1 April 1 October 1
Functional Bracing of the Upper Extremities	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Sept. 28—Oct. 2, 1959 June 13—17, 1960
Above-Knee Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Nov. 16—20, 1959
Below-Knee Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	Dec. 14—18, 1959 Jan. 18—22, 1960 Feb. 29—Mar. 4, 1960 April 4—8, 1960
Upper Extremities Prosthetics	U. of California and U. S. Office of Vocational Rehabilitation	Prosthetics Education Program Rm. B4-229, Medical Center University of California at Los Angeles 24, California	May 9—13, 1960
Postgraduate Cerebral Palsy Courses	Columbia University College of Physicians & Surgeons	Isabel P. Robinault, Ph.D. Supervisor, Postgraduate Cerebral Palsy Courses Columbia University College of Phys. & Surg. 630 West 168th Street New York 32, New York	Oct. 5—Dec. 4, 1959

Education

APTA-OVR Graduate Study Traineeships for Physical Therapists

The Graduate Study Committee, Mildred Wood, Chairman, Fred Szumski, and Lois Wellock, met on May 15 and 16 in the National Office.

The activities of the OVR Traineeship program were reviewed to date, deadline dates for receipt of credentials for applicants under the present grant were established, and a discussion of the committee report to the Board of Directors was held.

Future plans of the Committee were discussed and a more complete report will be available after the Board of Directors meeting in June.

The American Physical Therapy Association has received a grant from the U. S. Office of Vocational Rehabilitation to administer 15 traineeships of $2,400.00 each for graduate study for physical therapists.

Purpose of Program

To assist the Association in its efforts to increase the supply of physical therapists who are qualified by experience and graduate study for teaching, research or other positions of leadership.

Eligibility Requirements

1. Member of the American Physical Therapy Association.
2. Baccalaureate degree from a regionally accredited college or university.
3. Minimum of two years of experience in the clinical aspects of physical therapy.
4. Citizen of the United States or lawfully admitted for permanent residence.
5. Recipients of other Federal benefits are ineligible.

Additional Requirements

1. Acceptance by the graduate school of choice.
2. Evidence of physical and mental health.
3. Proposed, full time program of study, leading to an advanced degree, related to administration, supervision, teaching, research or clinical work.

Suggestions to Applicants

Physical therapists interested in graduate study and in applying for an award are encouraged to:

1. Make inquiries of graduate schools.
2. Have credits evaluated.
3. Discuss plans with faculty members.
4. Outline the expected program of study.
5. Complete and submit an application. Forms are available from the American Physical Therapy Association.

Deadlines for Applications

Applications will be reviewed by the Association's appointed Committee periodically throughout the year. Awards will be made in August, December, and April. A personal interview may be requested.

Applicants will be notified of Committee action. Reasons for nonacceptance of an application for award will not be disclosed. The decision of the Committee is final.

To be considered by the Committee, all credentials (application, photograph, letter of acceptance, letters of reference, transcripts) *must* be received in the APTA office as follows:

1. No later than November 1 for applicants beginning their program of study in January-February, 1960.
2. No later than March 1 for applicants beginning their program of study in June, 1960.

Obligation

It is hoped that the recipient of an award will feel a responsibility to accept a position, on completion of the program of study, which will contribute toward the fulfillment of the stated purposes of the traineeship program.

"The characteristic of a truly great organization is one in which you can feel, in which you can hear, in which you know the members had an air of expectancy."

ALAN GREGG

The National Foundation's Health Scholarship State Selection Committees

When the National Foundation set up its new Health Scholarship Program, it also invited representatives of the five professions benefiting from the program to serve on the State Selection Committees which would choose the award winners. Each State Selection Committee has one member from medicine, medical social work, nursing, occupational therapy, and physical therapy. All five members will pass on all applications for Health Scholarships in their state.

Forty-four State Selection Committees have now been chosen. The physical therapists serving on these committees are: *Alabama:* Mary G. Redden, Montgomery; *Alaska:* Helen Dittman, Ph.D., Anchorage; *Arizona:* Robert Nochta, Phoenix; *California:* Anna J. Janett, San Leandro; *Colorado:* Mary Tait Gordinier, Denver; *Delaware:* Eleanor J. Bader, Wilmington; *District of Columbia:* Lt. Col. Harriet S. Lee; *Florida:* Nancy A. Whitney, Daytona Beach; *Hawaii:* Ronald Oba, Honolulu; *Illinois:* Marjorie F. Martin, Normal; *Iowa:* Norman E. Miller, Des Moines; *Kansas:* Gertrude Beard, Kansas City; *Louisiana:* Lola E. Smith, New Orleans; *Maine:* Rowena A. Walden, Portland; *Maryland:* Ethel M. Dreyer, Baltimore; *Massachusetts:* Virginia O. Snively, Boston; *Michigan:* Marcia T. Keith, Oak Park; *Minnesota:* James Schilling, Minneapolis; *Mississippi:* J. T. Gilbert, Jackson; *Missouri:* Robert J. Hickok, St. Louis; *Montana:* Mary Jane Hahn, Billings; *Nebraska:* Harry R. Dinnel, Jr., Omaha; *Nevada:* Marion Barfknecht, Reno; *New Hampshire:* Joan D. Mohr, Hanover; *New Jersey:* Victoria Preitner, Plainfield; *New Mexico:* Nelson H. Coryea, Albuquerque; *New York:* Jay Schleichkorn, Farmingdale; *North Carolina:* Edith M. Vail, Winston-Salem; *North Dakota:* Clarence O. Blecha, Grand Forks; *Ohio:* Helen Stewart, Cleveland; *Oklahoma:* John C. Nygaard, Oklahoma City; *Pennsylvania:* Edna F. Schreiber, Lancaster; *Puerto Rico:* Lumida Viscal, San Juan; *Rhode Island:* Nancy B. D'Wolf, Providence; *South Carolina:* Dorothy Allen, Columbia; *South Dakota:* Carol L. Spensley, Sioux Falls; *Tennessee:* Junia Swanson, Memphis; *Texas:* Robert G. Maul, Lubbock; *Utah:* Grant S. Gregerson, Salt Lake City; *Vermont:* Sophie Myers, Burlington; *Virginia:* Phyllis J. Quinn, Richmond; *Washington:* Mary Leach, Edmonds; *West Virginia:* Marguerite C. Rukse, Man; *Wisconsin:* Leila R. Aanrud, West Allis.

Student Column

First Day in Physical Therapy School

Who: Eleven Members of The Class of 1959

Where: University of Texas Medical Branch, Galveston, Texas

Why: A desire to aid in the rehabilitation of the ill and handicapped. Additional motives, more individualistic in nature, were indicated in a recent class survey:

1. Prior association with those who had cerebral palsy and paralytic poliomyelitis.
2. High school "Career Day" programs which presented in a positive manner the merits of physical therapy.
3. Professional enthusiasm of dedicated physical therapists.
4. The science and skills of physical therapy as they relate to the varied tasks of the properly qualified athletic trainer.
5. A day's visit to the Michael Dowling Crippled Children's Institute of Minneapolis.
6. Introduction to the realm of heat, light, electricity, massage, and exercise following a medial meniscectomy after a basketball injury.
7. A transient journey into medical technology caused two class members to find that studying humanity under a microscope threatened to become both isolating and monotonous. Investigation into the scope and philosophy of physical therapy revealed the challenge and employment satisfaction that they seek.
8. A phenomenal episode sharpened Jean Meadows' interest in rehabilitation. On her father's farm a calf was born with rigid nonfunctional limbs. Jean and her mother labored daily, massaging the affected extremities. Gradual progress was noted beginning with assisted standing and terminating with independent ambulation. She concluded, "If it could be so rewarding to see a little calf gain the use of its muscles, how much more gratifying it would be to see a human being get well."

What: That series of human events known as the "first day" was initiated with a reassuring and inspiring welcome by Ruby Decker, Educational Director of the Physical Therapy School. Following the formalities of registration, a cordial "open house" was held in the Rehabilitation Clinic. During this interlude of informality, the student therapists met staff members of the Occupational and Physical Therapy Faculty who conduct classes in the basic medical sciences that form an integral part of the curriculum. Investigating the mysteries of the Physical Therapy Clinic and the University campus was a fascinating adventure. The grand finale consisted of the purchase en masse of the famous 1600-page volume known as Morris' *Human Anatomy*. At the end of the day the consensus was summed up in the words of Marcia Juday: "I'm exhausted physically but stimulated mentally!"

In months ahead, we shall strengthen our mutual intent until our intensive training will make us eligible to join those who contribute to the perpetual needs of humanity through physical therapy—a field of limitless horizons.

DONNA NELSON
University of Texas

Clinical Affiliations

A panel discussion on clinical affiliation was a feature of the April, 1959, meeting of the Student Branch, Connecticut Chapter of the American Physical Therapy Association.

Members of the panel were James Bauer and Elliot Barnard, University of Connecticut Physical Therapy School; and John Allen, M.D., Director, Physical Medicine Department, Hartford Hospital.

A brief history of the growth of the school's affiliations was given, and some of the objectives, such as developing a philosophy of patient care and realizing that clinical training before and after graduation is a continuation of education, were mentioned.

Dr. Allen, in speaking of what is expected of a physical therapy student at Hartford Hospital, said when with the patient, the student should be tactful, friendly, courteous, and a good listener. If any questions arise in the student's mind, he should not discuss them in the patient's presence but should take them up later with the supervisor. The panel was followed by questions from the floor.

Suzanne Chaffee
University of Connecticut

Handbook on Diet Therapy

An authoritative guide to therapeutic diets, the *Handbook of Diet Therapy*, has just been released in its third edition for The American Dietetic Association by the University of Chicago Press.

Revised and broadened, this edition emphasizes optimal nutrition as the basis of intelligent diet therapy. It offers menu plans and descriptions of therapeutic diets, based on the latest results of food and nutrition research. It provides new tables of food composition for more than 200 items including, saturated and unsaturated fatty acids and essential amino acids.

Heightening its usefulness, the Handbook includes new chapters on diet during pregnancy, adolescence, and old age.

The 208-page book was compiled by Dorothea F. Turner, chief medical nutritionist in the Department of Medicine at the University of Chicago and editor of the *Journal of the American Dietetic Association*.

The new edition of the *Handbook of Diet Therapy* may be obtained from The American Dietetic Association, 620 North Michigan Avenue, Chicago 11, Illinois. Price is $5.00.

Dues Notice

Annual dues were payable on May 1st. Your prompt response will be appreciated as a service to the Association and to insure your uninterrupted receipt of the *Physical Therapy Review* along with other membership privileges. Those who are not actively practicing physical therapy may apply for inactive membership.

Schools Offering Courses in Physical Therapy

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Schools offering the four year program leading to a baccalaureate degree accept high school graduates and transfer students. Schools offering the 12 to 16 months' program leading to a certificate accept students who have completed all or most of their undergraduate work providing they meet certain course requirements. Recipients of a degree and/or certificate have equal professional status. For specific information regarding each school's entrance requirements, curriculum, tuition and other fees, write to the physical therapy director indicated below. All students should investigate course requirements *early*.

	Degree	*Certificate*
CALIFORNIA		
Mary J. Dodge School of Physical Therapy Childrens Hospital Society 4614 Sunset Boulevard Los Angeles 27	‡	†
Ronald A. Hershey School of Physical Therapy College of Medical Evangelists Loma Linda	†	†
Lucille Daniels Division of Physical Therapy Stanford University Stanford (Palo Alto)	†	†
Margery L. Wagner Curriculum in Physical Therapy University of California The Medical Center San Francisco 22	†	†
Charlotte W. Anderson Department of Physical Therapy University of Southern California Los Angeles 7	†	†
COLORADO		
Dorothy Hoag Curriculum in Physical Therapy University of Colorado Medical School Denver 20	†	†
CONNECTICUT		
James M. Bauer Acting Director School of Physical Therapy U 101 University of Connecticut Storrs	†	
ILLINOIS		
Elizabeth C. Wood Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
IOWA		
Olive C. Farr Physical Therapy State University of Iowa Hospitals Iowa City		†
KANSAS		
Ruth G. Monteith Section of Physical Therapy Education University of Kansas Medical Center Kansas City 12	†	†
LOUISIANA		
(Not accepting students during 1958-1959) Director School of Physical Therapy Charity Hospital of Louisiana New Orleans 12		†
MARYLAND		
Gladys E. Wadsworth, Ph.D. Department of Physical Therapy School of Medicine University of Maryland Baltimore 1	†	
MASSACHUSETTS		
Adelaide L. McGarrett Physical Therapy Department Boston University Sargent College University Road Boston 15	†	†
Constance K. Greene Department of Physical Therapy *Bouvé-Boston School, Tufts University Medford 55	†	
Shirley M. Cogland *Program in Physical Therapy Simmons College-Children's Hospital 300 Longwood Avenue Boston 15	†	†
MICHIGAN		
Virginia Wilson Curriculum in Physical Therapy The University of Michigan University Hospital Ann Arbor	†	†
MINNESOTA		
Darrell D. Hunt School of Physical Therapy Mayo Clinic Rochester		†
Wilbur L. Moen Course in Physical Therapy University of Minnesota 860 Mayo Memorial Building Minneapolis 14	†	

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

	Degree	Certificate
MISSOURI		
Sr. M. Imelda, S.S.M. Department of Physical Therapy St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Beatrice F. Schulz Department of Physical Therapy Washington University School of Medicine 660 So. Kingshighway St. Louis 10	†	
NEW YORK		
Dorothy L. McLaughlin Albany Medical College Division of Physical Therapy Albany 8	‡	†
Mary E. Callahan Courses for Physical Therapists Columbia University College of Physicians & Surgeons 630 West 168th Street New York 32	†	†
Elizabeth C. Addoms Physical Therapy Curriculum School of Education, New York University Washington Square East New York 3	†	†
Mildred F. Heap Program in Physical Therapy University of Buffalo 3435 Main Street Buffalo 14	†	†
NORTH CAROLINA		
Helen Kaiser Division of Physical Therapy Box 3403, Duke University Medical Center Durham		†
Margaret L. Moore Section of Physical Therapy School of Medicine University of North Carolina Chapel Hill	†	
OHIO		
Robert D. Kruse, D.P.E. Course in Physical Therapy Frank E. Bunts Educational Institute 2020 East 93rd Street Cleveland 6		†
Gladys G. Woods School of Physical Therapy Ohio State University University Hospital Columbus	†	†
OKLAHOMA		
Thelma Pedersen School of Physical Therapy University of Oklahoma, Medical Center Oklahoma City 4	†	†
PENNSYLVANIA		
Dorothy E. Baethke Division of Physical Therapy University of Pennsylvania 3901 Pine Street Philadelphia 4	†	†
Kathryn Kelley Curriculum in Physical Therapy D. T. Watson School of Physiatrics Leetsdale	‡	†
PUERTO RICO		
(All classes given in Spanish) Lutgarda V. Piñeiro School of Physical & Occupational Therapy Candelaria & Mandry Streets Stop 22, Santurce	†	†
TEXAS		
Doris E. Porter Grady Vaughn School of Physical Therapy Baylor University Hospital Dallas 1	†	†
Cecelia J. Lee School of Physical Therapy Hermann Hospital Houston 25	‡	†
Ruby Decker School of Physical Therapy The University of Texas Medical Branch Galveston	†	†
VIRGINIA		
Susanne Hirt School of Physical Therapy Medical College of Virginia Richmond 19	†	
WISCONSIN		
Beth J. Phillips Curriculum in Physical Therapy Marquette University School of Medicine 561 North 15th Street Milwaukee 3	†	
Margaret Kohli Course in Physical Therapy University of Wisconsin Madison 6	†	
U. S. ARMY MEDICAL SERVICE		
*Physical Therapy Course Army Medical Service School Brooke Army Medical Center Fort Sam Houston, Texas Write to: The Surgeon General Department of the Army Washington 25, D.C. Att.: Personnel Division		†

* Accepts women students only.

‡ Baccalaureate degree available from an affiliating college or university.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Physiologic Consequences of Total Hemispherectomy in the Monkey

R. J. White, L. H. Schreiner, R. A. Hughes, C. S. MacCarty and J. H. Grinlay (Mayo Clinic and Foundation, Rochester, Minnesota) NEUROLOGY, 9:149-159, March 1959

Radical surgery for malignant disease of the brain has had limited use due to the severe neurological residuals of such procedures.

Most experiments performed on monkeys in the past have included only decortication hemidecortication or unilateral removal of the cortex, basal ganglia and part of the thalmus; however, the literature contains one report of the successful removal of the entire cortex, caudate nucleus, putamen, globus pallidus, thalmus and subthalmic structures from a rhesus monkey in two stages.

Using 14 Macaca monkeys, the authors undertook a study of the surgical procedure and functional results of total hemispherectomy, defined by them as unilateral removal of the cerebral cortex, basal ganglia, internal capsule and thalmus, in one operation. Of the 14 monkeys, 12 were hemispherectomized and two, which served as controls, underwent unilateral decortication. No attempt was made during either procedure to reduce cerebral circulation by occlusion of the carotid and vertebral arteries.

All of the monkeys survived the operative procedure; however, two of those that had had hemispherectomy died subsequently. They all reacted rapidly following surgery, regaining consciousness in from two to six hours.

Within two to three months there was excellent return of motor function to the contralateral side in the hemispherectomized group. They were able to stand, walk, run and climb, although fine movements of the hand and foot were never observed. It was felt that although purposeful responses may be elicited subcortically, the high degree of motor function attained in these animals indicated cortical influence. This tends to support the theory of bilateral motor innervation. The decorticate monkeys regained motor function more rapidly but little difference was seen in the two groups after maximal return.

Postoperatively there was total contralateral flaccidity which in the upper extremity gave way to moderate spasticity after two weeks to one month.

In the hemispherectomized animal response to pain was negative on the contralateral side for the first 24 hours but gradual improvement was noted during the first month with greatest recovery demonstrated in the face, hand, and foot. The perception of heat was better than that of pain and more closely approximated the preoperative levels. This residual sensation would seem to indicate ipsilateral sensory representation in the thalmus. There was poor localization of pain except in the face. Sensation in the control group was recovered more rapidly and to a higher degree than in the hemispherectomized group. Light touch, vibratory sensation, position sense, and placing reactions were measurably absent in both groups.

Analyses were also made of muscle stretch reflexes, pathological reflexes, extrapyramidal manifestations and compulsive circling.

Chemopallidectomy

Harold D. Paxton, Donald T. Smith and Robert S. Dow (1010 Medical Dental Building, Portland 5, Oregon), NORTHWEST M., 58:370-372, March 1959

It is impossible to postulate with certainty the reasons for the effectiveness of chemopallidectomy in parkinsonism. One can speculate that the chemical destruction of nerve tissue removes an imbalance between the facilitory and inhibitory effects of the extrapyramidal disorder.

The author injects a mixture of alcohol and ethocel into the medial globus pallidus. When the needles are in place, a preliminary injection of procaine is given and if a significant relief of rigidity and tremor occurs, the alcohol mixture follows. This is repeated at three or four day intervals for a 10 day to 2 week period.

The patients selected were those no longer able to get about easily but who had few bulbar symptoms, no fixed contractures, and no mental symptoms. In some patients a significant reduction in rigidity and tremor could be seen. Use of the arms and hands and the gait improved and the patient was better able to care for himself. Posture, salivation, and speech disturbance were not affected by the procedure.

Effect of Exercise on the Peripheral Pulses

E. A. Edwards, N. R. Cohen, and M. Kaplan (Department of Surgery, Peter Bent Brigham Hospital, Boston) N. ENGLAND J. M., 260: 738-741, Apr. 9, 1959

Some patients whose pedal pulses are palpable still complain of intermittent claudication. It has been observed that these pulses may disappear on exercise. It has been established that atheroma is responsible for the claudication and that the peripheral pulses are palpable because the occlusion is incomplete. The authors report on their study which was conducted to examine the phenomenon of the disappearance of the peripheral pulses on exercise.

Eleven normal subjects and 11 patients with arteriosclerosis were studied. The pulses were registered simultaneously proximally at the thigh or calf, and distally at the foot or toe, before and after exercise. Three varieties of exercise were used: stair climbing, toe stands, and toe pushes. The pulse recordings indicated that exercise increased the amplitude and systolic slope proximally and diminished the pulse distally in both normal and arteriosclerotic subjects.

The authors concluded that exercise produces a shift or diversion of blood to the muscles being used, leaving less for distal and less muscular areas. The shift was assumed to be caused by the vasodilitation that is known to exist in muscles under use. Distal vasoconstriction was ruled out since sympathectomy did not reverse the effect. The pulse at the toe, being in an area devoid of muscle, responds quite invariably to this shift; however, the response at the calf or thigh will vary according to the amount of muscle present and according to the extent the muscles are used during particular exercises. Atrophy, stiffness, or variations in gait thus modify the reaction. The relief of intermittent claudication by division of the achilles tendon is an example of such modification.

In patients exhibiting claudication the diminution of the pedal pulse is confirmed by this study, but the theory that arterial spasm is responsible is denied. Claudication in these patients is usually due to partial occlusion at aortic or iliac levels, with resultant inadequate flow for the demands of exercise.

The shift of blood away from the

foot during exercise explains the production, in some patients, of ischemic symptoms in these parts during walking. For this reason, the authors advise caution in the use of exercise for the ischemic foot.

The Effects of "Dry" Heat on the Circulation of Man—II. Splanchnic Hemodynamics

Elmerice Traks and Salvatore M. Sancetta. Technical Assistants Gladys Hickman, Hanna Janouskovec and Helen Haney (Department of Medicine, Cleveland General Hospital, Cleveland, Ohio), AM. HEART J. 57:438-448, March 1959

The object of this study was to obtain data relevant to the hepatic venous outflow and splanchnic vascular resistance resulting from effects of dry heat.

Other authorities in earlier studies had stated that an increase in the ambient temperature would of necessity cause a decreased splanchnic blood flow and increased splanchnic vascular resistance. Although not documented, the investigators thought it possible that a decrease in splanchnic blood flow and an increase in splanchnic vascular resistance may occur when the cardiac output in man is made to increase significantly by exposure to an excessively high temperature and humidity, though this was not the case in a resting person where attention was paid to the prevention of a significant disparity between increased body metabolism and heat dissipation.

The findings of this study show a decrease in the splanchnic vascular resistance with no change in the splanchnic blood flow. These findings match the physiologic directions of a previously reported experiment by the same investigators wherein there was no significant increase in cardiac output coupled with significant decreases in the systemic and total pulmonary vascular resistances.

The subjects chosen consisted of 34 patients who had either normal hearts or heart disease wherein the sole cause lay in factors burdening the left ventricle. None had liver disease. These subjects were exposed for two hours to a relatively dry and warm environment of 98 degrees (F.) ±1 degree and humidity of 40 per cent ±3.

Exposure to a warm environment caused a significant decrease in the brachial artery pressure and in the splanchnic vascular resistance. There was no significant change in the estimated hepatic blood flow and in the calculated splanchnic oxygen consumption.

The responses to heat were similar in patients with normal hearts and in those with enlarged hearts, regardless of the state of compensation of the left ventricle.

De Quervain's Disease

T. A. Lamphier, J. F. Pepi, C. Brush, J. Ostroger (Boston), J. INTERNAT. COLL. SURGEONS, 31:192-200, February 1959

The pathological picture of De Quervain's disease is described by the authors as a painful, disabling condition affecting the tendon sheath overlying the tendons of the abductor pollicis longus and extensor pollicis brevis muscles at the radial styloid process of the wrist. The cause of the disease is unknown although it is generally accepted in industrial circles as related to manual labor.

Frequently, this disease is treated as a chronic tenosynovitis, chronic sprain, or chronic arthritis in the outpatient clinics of large hospitals. Prolonged physical therapy and/or plaster casts are resorted to for weeks or months. Both treatments are valueless and result in great economic loss to the patient. The authors state that conservative therapy should be discouraged as it only prolongs disability and loss of working hours. Local injection of hydrocortisone has no value in the treatment of the disease. Surgical intervention is the treatment of choice. The surgical technic performed on a series of 84 patients is presented. Ninety-nine per cent of these cases were treated successfully by surgery. Active motion is instituted on the day after the operation. The average person can resume work on the tenth or twelfth day although the patient is free of pain from the first day.

Congenital Muscular Hypertrophy

Hans Zellweger and William Bell (State University of Iowa Hospital, Iowa City), NEUROLOGY, 9:160-166, March 1959

Infantile disorders associated with hypotonia occur frequently and suggest many diagnostic possibilities including amyotonia congenita, myesthenia gravis, benign congenital hypotonia, and others. At the other extreme is the infant with hypertonicity and hypertrophy of his muscular endowment. Muscular hypertonia becomes of pathologic significance if it persists beyond the third month of life or if it is associated with muscular hypertrophy. This is the group of diseases dealt with in this paper in the hope that further interest and investigation of this problem will be stimulated.

The cases of congenital muscular hypertrophy reported in the literature are reviewed and 3 new cases are presented. Several different categories of congenital muscular hypertrophy in infancy are distinguished. 1. Congenital muscular hypertrophy associated with brain disease. 2. Thomsen's disease or myotonia congenita. 3. Muscular glycogenesis. 4. Benign idiopathic congenital muscular hypertrophy. Although previous authors have indicated that hypothyroidism may be one of the causes of congenital muscular hypertrophy, recent experiences cast some doubt on the question of such a relationship. Thyroid medication, however, may have a beneficial effect on certain patients with muscular hypertonia and hypertrophy in infancy but reasons for this effect are not clear.

Effective Use of Teaching Time

C. R. B. Joyce and M. Weatherall (London Hospital Medical College, London) THE LANCET, Lond., 1: 568-571, March 14, 1959

Material covered in a preclinical medical course could be presented in more than one way—by lectures, seminars, demonstrations, practical classes, discussions, or a combination of methods. The effective use of teaching time was studied by comparing methods in which the contribution of teachers' time was small to methods in which teachers were involved more fully.

Four matched groups of preclinical students were given basic information on pharmacology of the peripheral nervous system by means of lectures. In addition, each group attended either demonstration or practical classes, conventional seminars or discussions. The usefulness, relative economy, and student attitude toward these methods were investigated.

The gains in knowledge, deter-

mined by a pre- and postcourse examination, were not significantly different. The amount of time spent by students in private study showed no correlation with their test scores.

Demonstrations required less time for all involved than the practical classes. Seminars required more teacher time than discussions, but student time varied only slightly.

Students thought demonstrations were more enjoyable and more useful than the practical classes. The students also valued seminars more highly than discussions.

The Scalene Lymph Node Biopsy

Gustav Bansmer, G. H. Lawrence and Lucius D. Hill (Mason Clinic, Seattle, Washington) J. THORACIC SURG., 37:305-313, March 1959

Lymph nodes in the lower anterior cervical triangle and retroclavicular area have long been recognized as a site of metastatic carcinoma from distant viscera. Lymphatic drainage of the body has been well plotted by anatomists, but the greatest familiarity was developed in those areas most commonly encountered by the surgeon. As a result, the lymphatic drainage of the thorax was of little clinical interest until the recent development of thoracic surgery.

There is much confusion of terminology in the literature relative to this cluster of nodes and, at present, the term, "scalene node," is becoming the most commonly used. Regardless of the term used, the nodes which lie in the fat pad over the anterior scalene muscle in the triangular space bounded by the carotid sheath medially, the omohyoid muscle supralaterally, and the subclavian vein inferiorly, are commonly called the scalene nodes.

The rule of thumb for selecting the site for biopsy has been stated quite simply. If the lesion is right sided a right scalene biopsy only is done. If the lesion arises in the left lower half of the lung field, then a bilateral biopsy is done; and if the lesion is confined to the left upper lobe, only the left side is sampled.

In addition to this rule of thumb the authors have included some variations. If there is only mediastinal disease, the side showing the most involvement is selected and if there is bilateral disease with neither side predominating, then both sides are biopsied. When there is sufficient suspicion that the lesion may have escaped the confines of the lung, a bilateral scalene node biopsy may yield a tissue diagnosis even if the most likely side is negative.

The authors' present policy is to perform (1) a scalene node biopsy on any patient with an undiagnosed pulmonary infiltrate, and (2) prior to thoracotomy if a positive bronchoscopic biopsy has been obtained. They feel that a positive scalene lymph node represents a contraindication to further surgery.

Although the primary use of the scalene node biopsy has been in either primary or metastatic pulmonary cancer, it is of even greater value in establishing a diagnosis of Boeck's sarcoidosis. Tumors of extrapulmonary origin have also been identified. Gastric, pancreatic, and breast carinomas have been demonstrated in these nodes.

The technic is simple and is done under local anesthesia. A 3 cm. incision is made extending from the posterior border of the clavicular head of the sternocleidomastoid muscle posteriorly 1 cm. above and parallel to the clavicle. The platysma is divided. The sternocleidomastoid is retracted anteriorly and the omohyoid superiorly. The fat pad containing the nodes is exposed and is excised by sharp and blunt dissection. Palpable nodes if present, may be removed individually to shorten the procedure.

Failure to obtain a diagnosis may have several origins, the most obvious being that there is no involvement of these nodes but, in general, one should expect involvement. The failure may be due to (1) inadequate removal of tissue from the proper area; (2) choice of incorrect side or failure to do both sides; and (3) blockage of more proximal lymphatic channels by tumor, preventing the extension of spread into the scalene nodes.

A Controlled Trial of Various Forms of Physiotherapy in Arthritis

D. E. Hamilton, E. G. L. Bywaters, and N. W. Pease (Hammersmith Hospital, England), BRIT. M. J., 5121:542-544, Feb. 28, 1959

A series of trials of four forms of treatment was set up to study outpatient treatment of persons with rheumatoid arthritis of hands or knees or degenerative joint disease involving the knees. Each patient received, in addition to the basic regime of active exercise and medication, four weeks of treatment with each of the four forms studied. Thus each patient acted as his own control. The treatments given were diathermy, infrared, faradic stimulation for the knee involvement and paraffin bath for hand involvement. In addition each patient had a month of "cold short wave diathermy" as a further control. The treatment to be given first in each series was varied in a random fashion.

Some improvement occurred in each of the diagnostic categories. When the treatments were compared, best results were found after the first month's treatment. There seemed to be no significant difference between the other forms of treatment and the dummy exposure to diathermy.

Physiological Tremor in Children

John Marshall (Academic Unit in Neurology, Institute of Neurology, Queen Square, London), J. NEUR. LOND., 22:33-35, February 1959

Healthy adults demonstrate a rhythmic tremor at about 10 c. p. s. In some subjects the amplitude of the tremor is such that it is discernible by the naked eye, while in others sensitive methods of recording are required for its detection. Marshall and Walsh (1956) noticed that the tremor in six normal children was slower than in adults. This report deals with a more extensive study of the physiological tremor in children in an effort to determine the mechanism involved.

The method used to record the tremor consists of an accelerometer double diode valve. Movement of the valve upsets a bridge circuit and the electrical output is fed through an Ediswan E.E.G. amplified to an ink writer.

The tremor of the outstretched hand of 287 children ranging in age from 2-16 years was recorded. Plotting the frequency of the tremor against age reveals a large number of children with a tremor at a frequency of 5 or 6 c.p.s. in all age groups, but the great majority are in the 2-9 year age groups. At age 16, it is uncommon to find a tremor frequency of 5-6 c.p.s. There appears to be a rather abrupt change after age 9 to the adult tremor of 10 c.p.s. Random observations indicate that the 10 c.p.s. tremor is well established by age 18 and is maintained throughout the remainder of a healthy life.

The author points out that perhaps the 5-6 c.p.s. tremor found in children is not a slower version of the physiological tremor seen in adults but is rather a separate phenomenon with its own neural mechanism. Some pathological tremors have a frequency of 5-6 c.p.s. and become apparent as a result of neural structures being damaged by disease. It is further postulated that the 5-6 c.p.s. observed in childhood is based on a more primitive neural mechanism, the activity of which is suppressed at about the age of 9 years by the development of more adult neural mechanisms.

Treatment of Scleroderma

Chris J. D. Zarafonetis (Temple University Medical Center, Philadelphia), ANN. INT. M., 50: 343-365, February 1959

Scleroderma, or diffuse systemic sclerosis, is a challenging disease because it has an unknown etiology and a poorly understood pathogenesis. Cutaneous involvement characteristically dominates the clinical picture although no system is immune. Pain and stiffness of joints plus myalgias are not uncommon. Much of the involvement of organs is manifested by fibrotic changes in smooth muscle coats. Fibrotic tissue undergoes shortening and causes contracture deformities and atrophic changes. In fully developed scleroderma, profound disability associated with high fatality rate is not surprising.

Although no treatment has been uniformly successful, it is believed that much can be accomplished if antifibrosis therapy is instituted early and available measures are used to prevent disabling contractures.

The article describes a program used during the last decade in the direct management of 72 cases of scleroderma, together with 10 other patients treated in a similar manner. There were 14 males and 58 females ranging in age at time of therapy from 3½ to 75 years. The earliest onset was in a 10 month old female.

The following program was utilized:

1. Systemic antifibrosis therapy through long term administration of potassium para-aminobenzoate,
2. Physical therapy including dynamic traction splints where applicable and
3. Urecholine for the alleviation of dysphagia (difficulty in swallowing).

Ten years ago it was observed that potassium para-aminobenzoate would soften and reverse in varying degrees the cutaneous changes of scleroderma and was preferred to crystalline acid or sodium salt because it was less associated with anorexia and nausea. Aside from adequate dosage, most important requirement of Potaba therapy is prolonged administration. This is proved by only 2 failures out of 60 subjects treated over 3 months. Gain in weight and subjective improvement generally accompanies the improvement in skin texture.

It was noted early that joint motion had no significant improvement despite cutaneous improvement. It was later recognized that pericapsular involvement was part of the disease process since roentgenographic studies generally revealed no intra-articular changes to account for the persistance of contractures. The observed contractures are due to pericapsular fibrosis with the finger joint contractures being the most prominent. Wrists, elbows, shoulders, jaws, and lower extremity joints are also often involved. Therefore, it is advisable to begin physical therapy in addition to Potaba therapy as early as possible.

Active and passive range-of-motion exercises were a regular feature of the program and dynamic traction splints were constructed to aid in overcoming either flexion or extension of fingers. It proved evident that the value of a splint is proportional to the time it is worn.

Deep breathing exercises were included in the program because a low vital capacity was commonly found in the subjects with generalized sclerosis. Since the rigidity of the thorax remained although the skin over the thorax loosened, it was suspected that the costovertebral and costosternal joints had experienced pericapsular fibrosis. Histologic evidence obtained at necropsy strongly supported the view that pericapsular fibrosis contributes importantly to the embarrassment of ventilatory function in the scleroderma patient. For this reason, Potaba administration should be started as early as possible plus deep breathing exercises as part of the daily program.

Dysphagia has been recognized by numerous workers and has generally been attributed to fibrotic changes in the esophageal wall. Urecholine is prescribed for patients with scleroderma who complain of dysphagia. A 5 mg. or 10 mg. tablet, crushed and swallowed one-half hour before each meal, usually prevents or minimizes the difficulty.

This article included case studies to emphasize the importance of the various parts of the treatment program and to stress how one treatment aids the other.

A Quantitative Method of Estimating Flexion and Extension of the Spine—A Preliminary Report

Martin Israel, MIL. M. 124:181-186, March 1959

Several methods of estimating flexion and extension of the spine are reviewed and a quantitative method for estimation of spinal flexion and extension is presented. The method used in this study for measuring flexion and extension of the spine is analogous to the method used by surveying engineers for establishing a curved road. The angle found by intersecting tangents changes as the curve of the particular segment of the spine changes with flexion and extension. This method is applicable only to measurement of flexion and extension of the spine. It is not applicable to the usual measurements of goniometry where angles are measured to indicate the angular relationship of the two linear anatomical parts comprising a joint either in flexion or extension or in rotary movements.

The method essentially consists of establishing tangents from a drawing of the curve of the spine and measuring the acute angle of the point of intersection of the tangents. This angle is characteristic of the particular curve that is under examination.

A series on 10 female ballet dancers ranging in age from 18 to 23 was studied using this method.

A Successful Treatment for Multiple Sclerosis Patients

George H. Hess (2704 Sunset Drive, Tacoma 66, Washington), NORTHWEST M., 58:377-382, March 1959

The medical care of the multiple sclerosis patient should be in the hands of an understanding family physician. The optimistic attitude of

the physician may be the needed catalyst to accelerate the reaction leading to successful treatment. The dysfunction may be minimized by careful supportive and symptomatic management of the patient.

The treatment suggested is not a cure but a practical guide for management. After a history and physical examination by the doctor, the physical therapist evaluates the patient's muscle strength, coordination, spasm, and tightness. The daily regimen of treatment includes active and assisted motion, posture and gait training. Other modalities of physical therapy are used infrequently. The home program planned for the patient emphasizes full range of motion in every joint, reciprocal motions and practice in coordination. The aim is to improve the patient's confidence in himself and his ability to get about independently.

Other facets of the treatment include allergy management, administration of histamine to maintain mild vasodilatation, and the use of muscle relaxants. The author has found little or no value in treatment with corticosteroids or in large doses of vitamin supplements.

An Electromyographic Study of Coactivity of Human Extraocular Muscles in the Following Movements

E. Tamler (Division of Ophthalmology, Stanford University School of Medicine, San Francisco) E. Marg, A. Jampolsky, A. M. A. ARCH. OPHTH., 61: 270-273, February 1959

It is the purpose of this paper to report the results of the hypothesis that as the lateral rectus abducts the eye, the vertical recti and the obliques cocontract to steady the eye in its horizontal path. Cocontraction is defined as the simultaneous increased contraction of extraocular muscles which are normally antagonistic in their primary field of action. As early as 1897, Duane postulated this steadying effect and reinforcement of eye movement by cocontraction of auxiliary muscles. The definition of auxillary muscles as used here is those extraocular muscles other than the prime mover (agonist) and its direct antogonist.

Eye movements were studied by using multiple channel electromyography and simultaneously recording the electrical activity of the (1) right lateral rectus, (2) right medial rectus, (3) right superior rectus and (4) right inferior oblique. Up gaze, down gaze, adduction, and abduction of the eye were studied in numerous subjects over a period of two years. The data supports the original hypothesis. There is little or no increased coactivity of auxilliary extraocular muscles in adduction, abduction, supra-aduction and infraduction during slow vertical and horizontal following movements.

Abstracters for July

We are indebted to these Association members for assistance in the preparation of the abstracts that appear in this issue.

Rachel Adams Ethel Coeling
Marilyn Anderson Edwin Harper
Mildred Brown Dorothy Kemske
Molly Brown Miriam Partridge
Virginia Wirtz

Book Reviews . . . . .

Skin Grafting. *By James Barrett Brown, M.D., Professor of Clinical Surgery, Washington University School of Medicine; Chief Consultant in Plastic Surgery to the Surgeon General, U.S. Army; Senior Consultant in Plastic Surgery, European Theater of Operations, U.S. Army, and Chief of Plastic Surgery at Valley Forge General Hospital in World War II. And Frank McDowell, M.D., Associate Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, Mo. Ed. 3: Cloth; price $15.00. Pp. 411 illus. J. B. Lippincott, Philadelphia, Pa., 1958.*

The third edition of this standard reference and textbook represents a thorough revision and the addition of much new and different material. Although some sections of the book reflect the earlier editions' primary interest in the treatment of burns by skin grafting, the thorough discussion of pedicle flaps plus the chapters on injuries to the skin other than burns, and the most interesting summary of the experimental work on post-mortem skin homografts and skin bank reflect the maturing stature of plastic surgery.

The reviewer was especially interested in the great number of cases of skin grafting to the extremities, especially these included under the section on skin grafting in military plastic surgery.

The illustrations are numerous, clear and accurate. These depict pathology as it appears clinically.

The chapter discussing the technic of cutting and applying split skin grafts should prove most useful to the house surgeon and to those surgeons not trained in plastic surgery who must secure emergency coverage of exposed areas by applying split thickness skin grafts.

The reviewer was especially pleased with the frequent discussion of the restoration of function by skin grafting and agrees with Dr. Michael Mason who is quoted in the preface of this third edition as saying, "Plastic surgery has not only grown into adulthood since the early part of this century but has made a real impact on all surgery.... The plastic surgeon, with his meticulous technic, his respect for tissues, his insistence on careful hemostasis and respect for blood supply, his demand for fine instruments and suture material and for accurate closures has called the attention of surgeons to the importance of these principles in all surgery.... the plastic surgeon has put skin-grafting where it belongs, as a technic of surgery applicable to all fields of surgery, just as is suturing or hemostasis."

Fractures and Dislocations. *By George Perkins, M.Ch., F.R.C.S., Consulting Orthopedic Surgeon, St. Thomas's Hospital, London; Consulting Surgeon, Bristow Hospital, Pyrford. Cloth; price $13.50. Pp. 363; illus. Oxford University Press, New York, 1958.*

A highly individualized approach to the treatment of fractures and dislocations is offered by Dr. George Perkins in his recent book, *Fractures and Dislocations.* The author, who is a past president of the British Orthopaedic Association is well qualified to speak on this subject.

Dr. Perkins divides fractures into three classes one, two, or three star —depending on severity of fracture and difficulty of treatment. Thus, at a glance one can determine the depth of the problem at hand.

Perhaps most important from the viewpoint of the physical therapist is the emphasis placed on good physical therapy by this text. Whenever possible, the author stresses activity of the patient in treatment.

The opening chapters of the book present concisely the basic classification, diagnosis, and principles of treatment of fractures. Mechanism of repair is discussed as are the concomitant injuries to surrounding tissues. Some of the ideas expressed by the author are controversial and one may easily take exception to some of them. The author for example recommends early mobilization and weight bearing in os calcis fractures and compression fractures of the spine. Unfortunately, no statistics are presented to substantiate his claims; however, the author has had considerable experience and one must assume has ample reason for his conclusions. At any rate the text is stimulating and thought provoking.

The book is beautifully illustrated and should serve as a fine reference volume.

Epilepsy. *By Manfred Sakel, M.D. Cloth; price $5.00. Pp. 204; illus. Philosophical Library, Inc., New York, 1958.*

Professor Otto Poetzl's preface to this manuscript is ponderous and expressed in terms formidable to practicing physicians and laity alike. There follows a brief general review of epilepsy—definition, symptomatology, classification, pathogenesis, etiology, and routine therapy.

Dr. Sakel's remarks concerning the psychological and social aspects of this disorder reflect a large clinical experience and a keen understanding of human nature. He emphasizes the need for seizure control to prevent the "accumulation of microscopic disseminated brain injuries which occur and remain irreversible after each seizure." These latter concepts stand out as most valuable in Part I of this text.

Part II pertains to a proposed method of curing epilepsy based on Dr. Sakel's concept that the epileptic seizure is a defense mechanism as a result of a sudden imbalance "between the two antagonistic ends of the neurohormonal vegatative system." Vagotonic stimuli provoke convulsions as a result of suddenly produced counterbalancing adrenocortical influences. Sakel postulated that a slow sustained overstimulation of the sympathetic system might achieve this balance without seizure phenomena. He aimed for this effect by implanting hyperactive thyroid tissue into the thyroid glands of the epileptic patient. Results in two subjects were equivocal in the reviewer's opinion.

In this section, Dr. Sakel makes many interesting references to his pioneer work in the treatment of schizophrenia and allied neuropsychiatric disorders by the use of insulin shock treatment.

The manuscript is considered to be of chief interest to the neurophysiologist.

Lumbar Disc Lesions: Pathogenesis and Treatment of Low Back Pain and Sciatica. *By J. R. Armstrong, M.D., M.Ch., F.R.C.S., Orthopedic Surgeon to Metropolitan Hospital and the Lambeth Hospital; Visiting Orthopedic Surgeon to Manor House Hospital, (Industrial Orthopedic Society); Honorary Consulting Orthopedic Surgeon to Royal Waterloo Hospital for Children and Women; Late Visiting Orthopedic Surgeon to the Ministry of Pensions Hospital, Stokes-Mandeville; Late Orthopedic Specialist, Royal Air Force Medical Service. Ed. 2. Cloth; price $12.00. Pp. 244; illus. Williams & Wilkins, Baltimore, 1958.*

Lumbar Disc Lesions reflects the long years of the author's experience in treatment of low back disorders—experience and acute observation of many thousands of cases, and considerable research into the literature on the subject. The work, subtitled Pathogenesis and Treatment of Low Back Pain and Sciatica, now in its second edition, may be used as reference by any medical person dealing with these maladies. Primarily directed to the orthopedic surgeon, the purpose of the book is to clarify existing confusion regarding disk lesions and their treatment. In the preface to the second edition, Dr. Armstrong expresses concern over the continuing lack of objectivity in treatment programs for low back problems. Disclaiming any marked increase in knowledge of the subject over the six intervening years since the first edition was published, there is that much more clinical experience on which to verify observations of diagnosis and treatment technics.

The book falls into four major sections, namely: anatomy and function, pathology and clinical picture, differential diagnosis, and finally, treatment. Although the part that deals with a review of the anatomy and function of the intervertebral disk and its related structures is brief, it is nonetheless clear and sufficiently detailed. The entire text is concise, logical, and not without a touch of humor, warmth, and understanding. Excellent schematic diagrams amplify the descriptions throughout the text.

The second major discussion covers patholgical condition of the disk, and secondary changes often associated with a disk lesion. The doctor compares the patient's observations, of onset of discomfort and disability, with clinical findings. These are supplemented with a few carefully chosen photographs and X-ray studies.

Differential diagnoses has been subdivided into those conditions simulating disk lesions; first, those with a combination of low back pain and sciatica; and then those with either of these conditions alone predominating. A table summarizing conditions causing low back pain and/or sciatica lists 16 categories: among them, disk lesions, developmental defects, trauma, postural strain, arthritis, neoplasms, and many more. While necessarily brief, there would appear to be sufficient succinct comment to be helpful in diagnosis.

Conservative treatment, as found most efficacious in the majority of cases in Dr. Armstrong's experience, is outlined; positioning and absolute rest in the acute stage, plaster immobilization and bracing in progressive stages to the resumption of activity are advocated. Other forms of treatment, as manipulation and massage, and especially recent emphasis on use of traction in treatment of disk lesions are questioned as to their effectiveness, if not possible harm.

The author states that operative treatment is resorted to in only a minority of cases, and this only after a stiff regime of conservative therapy has been tried unsuccessfully. A few exceptions to the procedure of postponing surgery until a trial period of bed rest are cited, among them the emergency situation arising when a ruptured disk presses on spinal cord and creates paralysis.

Operative technics used by the author are described in detail. Colored illustrations of proceedings add to the presentation. There is included, also, a series of color plates illustrating various types of disk lesions found at operation. If after disk removal, natural fusion fails to take place, the author has found that a need may arise for other fixation of the involved area of the spine. He analyzes various technics currently in use, as to the merits and demerits of

each, and again includes diagrammatic sketches for added clarity.

Dr. Armstrong's views may be deliberately provocative in many instances; for example, his summary dismissal of traction and manipulation as treatment technics—but he writes with logic and with authority that demand attention and respect.

The Stormy Decade: Adolescence. *By George J. Mohr, M.D., Director, Child Study Center and Division of Child Psychiatry, Mount Sinai Hospital, Los Angeles; Clinical Professor of Psychiatry, University of Southern California. And Marian A. Despres, Ph.D., formerly Assistant Professor of Psychology, Roosevelt University. Cloth; price $3.95. Pp. 272; illus. Random House, New York, 1958.*

During the past decade there has been a veritable spate of publications dealing with various aspects of adolescence, the interval between childhood and adult life. This new text, written jointly by a practicing psychiatrist and by a psychologist, is one of the most readable and helpful that this reviewer has yet seen.

Too many publications have concerned themselves almost exclusively with the disturbances of adolescence. While these are dealt with in the latter portion of this text, Dr. Mohr and Dr. Despres have wisely given most of their attention to the normal process of growth and development of the child both before and during this particular period. Against this background, the adolescent himself is considered as a part of his family, his community, and his society. His development of independence, his need for status among his peers and his adaptation to a new series of heterosexual relationships are all considered and the difficulties which may be encountered in making these adaptations are discussed. In the final chapter, the authors summarize the basic requirements for mental health which must be met if the adolescent is to realize his optimal development.

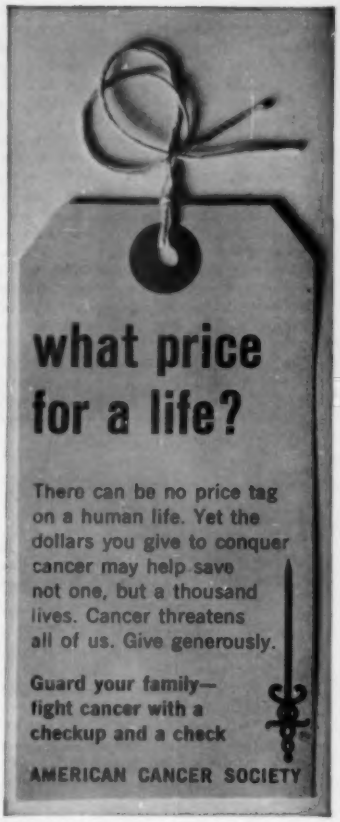
This is a text which can be highly recommended.

The reviews published here do not necessarily represent the opinions of the American Physical Therapy Association.

Multiple Sclerosis

Development of new technics in neurology now promises to provide earlier diagnosis of multiple sclerosis. Until recently, average time between onset and diagnosis was about six years. "The multiple sclerosis patient today lives longer than was thought possible a few years ago. Many people with mild or even moderately severe cases can live normal lives and work regularly for years," says a new booklet, "Multiple Sclerosis—Hope Through Research."

G. P., February 1959, page 156.


what price
for a life?
There can be no price tag on a human life. Yet the dollars you give to conquer cancer may help save not one, but a thousand lives. Cancer threatens all of us. Give generously.
Guard your family—fight cancer with a checkup and a check
AMERICAN CANCER SOCIETY

Book Reviewers for July

Jean Holowack, M.D., Assistant Professor of Pediatrics, Washington University, School of Medicine, St. Louis.

George R. Miller, M.D., Associate Surgeon, North Carolina Orthopedic Hospital, Gastonia, North Carolina.

Donald C. Smith, M.D., Associate Professor of Maternal and Child Health, University of Michigan, School of Public Health, Ann Arbor.

Julianne C. Steffins, Physical Therapist, Glastonbury, Connecticut.

Jack Wickstrom, M.D., Department of Surgery, Division of Orthopaedics, Tulane University School of Medicine, New Orleans.

American Hospital Association Institute for Physical Therapists

The Sixth Annual Institute for Physical Therapists sponsored by the American Hospital Association is to be held in Houston, Texas, from November 9 through 13, 1959. The Texas Chapter of the American Physical Therapy Association has appointed a planning committee of six members who have met with representatives of the American Hospital Association and the National Office of the APTA.

The Institute will include sections on hospital organization, medical records, medical-legal and financial implications, disaster planning, as well as discussions on responsibilities in staffing and interrelationships within the hospital.

What's New .....

For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

New items which may be of interest to physical therapists will be mentioned in these pages each month. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review.*

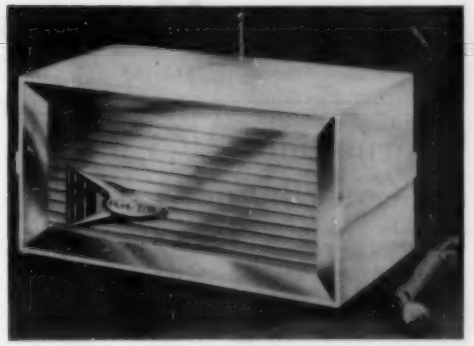
70. Orthopedic Back Support

Orthopedic Back Supports, according to the manufacturer, have been redesigned to provide pinpoint selective pressure control. Model 886 (illustrated) now features a closed back support made of surgical weight coutil. A snap front with extra hook and eye fastening and specially designed side laces provide selective control. The line includes four models available in stock sizes, 30-44. Akron Truss Company.

71. Functional Fashions

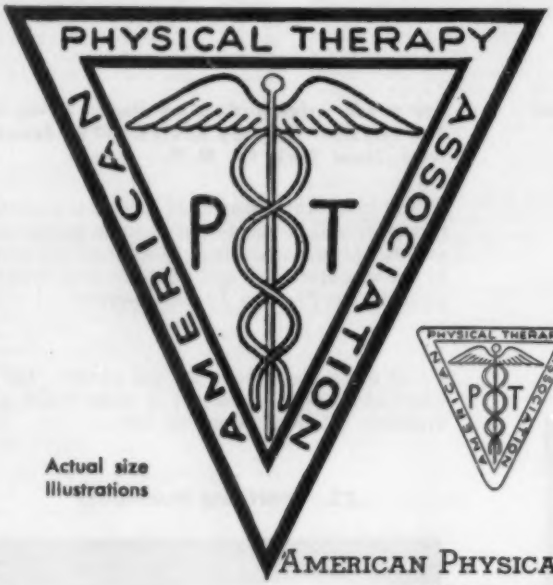
Functional Fashions for the Physically Handicapped, scientifically constructed and styled, are the result of study and research to provide ease in dressing and comfort in wearing. Among the items presented are a classic tailored suit dress, a coat dress, slacks for men and women; and a wheel chair cape. Catalog and order blank are available. Clothing Research, Inc.

72. Portable Humidifier



Humi-Zon, a new portable humidifier, automatically keeps humidity at the 40-50 per cent level in a room 10 feet by 14 feet by 8 feet.

Self-regulating, the device uses less than 1 cent worth of electricity in 24 hours, and adds as much as 2 pounds of water to the air in a day. Available in turquoise or ivory color, the plastic cabinet is 12 inches by 8 inches by 6 inches. It is said to be perfect for use in children's rooms, sickrooms, office and waiting rooms. Safeguard Corporation.



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Information for Contributors

The Physical Therapy Review welcomes original articles of interest to physical therapists throughout the world. Prompt reviewing and processing of papers will be assured if attention is given to the following suggestions.

Manuscripts are accepted with the understanding that they have not been published elsewhere. Contributions may be classified as "Feature Articles," "Suggestions from the Field," or "Case Reports." Feature articles are longer and deal rather extensively with the subject presented; suggestions from the field are brief and describe the instrument or device presented; case reports are short and concerned with discussion of a treatment for a specific type of disease or disability. All material should be presented in a clear, logical, and impersonal discourse.

Submit the original *manuscript* and one carbon copy (keep one carbon copy for your files). All written material should be typed, double-spaced with minimum margins of 1 inch on 8½ x 11 inch opaque white paper. Legends for illustrations, tables, references, and acknowledgments should be placed each on a separate sheet. When citing another author's work, a superscript numeral must appear in the body of the manuscript. The *references* must be accurate and numbered in the order in which they appear in the text. Include the name of each author, title of the article, name of periodical, volume number, inclusive pages, and date.

Illustrations should be protected by cardboard and the name of author and figure number written with soft pencil on the back. If *photographs* are used, sharp black and white prints on glossy paper are required, avoid distracting backgrounds. Graphs, charts, and line figures drawn with india ink on heavy white paper are necessary for good reproductions. Letters and figures should be large enough so that they will be readable when reduced for publication. Tables are reproduced more legibly when the carbon is reversed and typing occurs on both sides of the paper.

Address manuscripts to:

PHYSICAL THERAPY REVIEW
1790 Broadway—Room 310
New York 19, New York

Positions Available

EXPANSION PROGRAM necessitates increasing present physical therapy staff of 8. Three full time physiatrists provide medical supervision. Excellent starting salary and fringe benefits commensurate with experience. Educational opportunities, both clinical and didactic, are excellent. Good opportunities for advancement. Overtime paid in excess of 5-day 40-hour work week. Write Director of Medical Services, Institute of Physical Medicine and Rehabilitation, 619 Glen Oak Avenue, Peoria, Illinois.

PHYSICAL THERAPIST: In Hospital-School for rehabilitation of children with orthopedic handicaps. Complete interesting program. Good salary, merit increases. Annual paid vacation, sick leave, excellent retirement plan. Write to Director of Physical Therapy, Illinois Children's Hospital-School, 2551 N. Clark Street, Chicago 14, Illinois.

Physical Therapist in Cerebral Palsy outpatient center. Salary from $3,800 to $5,000 depending on qualification and experience. Social Security, sick leave, vacation, forty hr. week. Apply United Cerebral Palsy Center, 621 N. McArthur, Panama City, Florida.

PHYSICAL THERAPIST: Staff position. Opportunity for experience in 450-bed hospital. Salary range $325.00-$350.00 per month. Paid vacation, 6 paid holidays, Blue Cross-Blue Shield group benefits. Immediate opening. Apply Mr. James Dryden, St. Elizabeth Hospital, 49 Hopeland St., Dayton 8, Ohio.

STAFF PHYSICAL THERAPIST (FEMALE) for full time work in offices of five orthopaedic surgeons. Forty-hour week, well established department, good salary. Will consider recent graduates. Write E. G. Derrick, Manager, The Orthopaedic Clinic, 2620 No. 3rd St., Phoenix, Arizona.

QUALIFIED PHYSICAL THERAPIST (two) for outpatient cerebral palsy treatment center. Starting salary $4550 per year. Two months vacation, liberal sick leave benefits. Liberal personnel policy. Contact Robert Schlitt, Director, Peninsula Cerebral Palsy Training Center, 901-24th Street, Newport News, Virginia.

IMMEDIATE OPENING for female staff physical therapist for children's hospital; 40-hour week, sick leave, 3 wks. vacation, salary commensurate with experience. Write Miss Nellie Koster, R.N., Director, Mary Free Bed Guild Children's Hospital and Orthopedic Center, 920 Cherry St., Grand Rapids 6, Michigan.

QUALIFIED PHYSICAL THERAPIST for immediate placement in well equipped department of 320-bed hospital. Excellent salary and personnel policies. Write Assistant Administrator, St. Mary's Hospital, Grand Rapids, Michigan.

REGISTERED PHYSICAL THERAPIST for student hospital on University of Illinois campus. Write Orville S. Walters, Director of Health Services, 807 South Wright Street, Champaign.

Wanted: QUALIFIED PHYSICAL THERAPIST, preferably one also registered in OCCUPATIONAL therapy. Experience in Cerebral Palsy desirable. Position: Director-Therapist of a growing Rehabilitation Center. Salary open. Write: Mario E. Rivera, RPT-OTR, Director, Easter Seal Therapy Center, Tallahassee, Fla.

Municipal Hospital of 650 beds needs a Registered Physical Therapist for newly redecorated department doing a wide variety of cases. Liberal personnel policies including 40-hour week, 2 week vacation, etc. Salary of $4888 to $5863 within 4 years. Write to R. E. White, Personnel Office, Hurley Hospital, Flint 2, Michigan.

Do you want to live and work in romantic New Orleans for one year or longer? 3000 bed teaching hospital. Affiliated two medical schools. Four staff positions vacated thru marriage and removal from city. 40 hour, 5 day week. Civil Service, retirement benefits. Apply Personnel Director, Charity Hospital, New Orleans 12, Louisiana.

QUALIFIED PHYSICAL THERAPIST, Female, eligible for or possessing Calif. registration, for 8 weeks' work in physical therapy section of medical clinic. Aug. 1-Sept. 26. Full charge; $100 per wk. plus bonus. Write Mary A. Ross, 945 Middlefield Rd., Redwood City, Calif.

PHYSICAL THERAPIST wanted. Comprehensive Rehabilitation Center. New building. Air conditioning.

Salary range, $4400 to $5200. Good personnel policies; 37½ hr., 5-day work week. Paid holidays. Paid vacation. Paid sick leave. Blue Cross-Blue Shield. Affiliations with colleges and universities for student training. Good medical supervision. Capitol and university city.

Call Roy E. Patton, WAlnut 6-2481 or write 3242 Sutherland Avenue, Indianapolis 5, Indiana.

Physical Therapist

For ultra modern hospital located on Chicago's north shore near parks and beaches; excellent starting salary; many liberal employee benefits including free Blue Cross, and a university tuition refund plan. Will consider recent graduate; for more information contact Personnel Director, Weiss Memorial Hospital, 4646 Marine Drive, Chicago 40, Illinois.

WANTED: PHYSICAL THERAPIST for Visiting Nurse Service. A few years' experience preferred. July 1959. Good personnel policies. Salary determined on basis of experience and educational background. Apply to Miss Ruth E. TeLinde, Director, 418 W. Mifflin Street, Madison 3, Wisconsin.

HENRY FORD HOSPITAL, Detroit, Michigan has an opening for a staff therapist; 5-day wk., all holidays, group insurance, and retirement benefits. Daily in-service staff training program. Complete cross-section of medical and surgical disabilities treated. Department under direction of a physiatrist. Write Dr. Wm. C. Schaefer, Division of Physical Medicine and Rehabilitation.

(continued on next page)

Positions Available

WANTED: Qualified Physical Therapist, male or female, for Physical Medicine and Rehabilitation department in a 600-bed general hospital 40-hour week; three weeks paid vacation; sick leave benefits and retirement program. Write: Herman J. Bearzy, M.D., Miami Valley Hospital, Dayton 9, Ohio.

STAFF PHYSICAL THERAPIST: for outpatient rehabilitation center treating both children and adults. Experience preferred but not essential. Starting salary, with experience, $4200. Forty-hr., five-day week. Excellent personnel policies. Contact: Benedict Kraus, Chief P. T., Community Rehabilitation Clinic, 614 Dartmouth S.W., Canton, Ohio.

TWO STAFF THERAPISTS needed for general hospital. Excellent education and teaching facilities. Good salary. Write for further details to: Dr. Hilda B. Case, Director of Physical Medicine and Rehabilitation, University Hospitals of Cleveland, 2065 Adelbert Road, Cleveland 6, Ohio.

PHYSICAL THERAPIST: Orthopedic Clinic staffed by three orthopedic surgeons, in one of Chicago's beautiful North Shore suburbs. Interested only in top notch, experienced individual. Salary open. Ravinia Orthopedic Clinic, 695 Roger Williams Ave., Highland Park, Illinois.

WANTED: Physical therapist, 610-bed general hospital. For information, contact Mr. Wayne E. Kirker, Chief Physical Therapist, Harrisburg Polyclinic Hospital, Harrisburg, Pa.

Qual. PT for OVR grant Home Care Rehab. Project. Physiatric supervision. Immediate opening $5,500, vac., sick leave. Apply Ann P. Kent, M.D., Dist. Health Officer, 34-33 Junction Blvd., J.Hts. 72, NYC.

QUALIFIED PHYSICAL THERAPIST for staff position in a 410-bed hospital. Completely remodeled and well equipped department, wide variety of cases divided equally between hospital and outpatient. Forty hour week, paid vacation, sick leave and holidays; salary open, depending upon qualifications and experience. Excellent opportunity in a growing community located in the Valley of the Sun, winter capitol of the Southwest. Apply Personnel Director, Good Samaritan Hospital, Phoenix, Arizona.

WORK IN SOUTHERN CALIFORNIA: Physical Therapists needed to staff new Rehabilitation Service at Rancho Los Amigos Hospital. All aspects of rehabilitation of all age levels including post-acute and convalescent care of respirator patients, general medical, and orthopedic disabilities and all aspects of bracing and prosthetics. In-service training program under direction of physical therapy instructor. Five-day, 40-hour week, holidays, sick leave, vacation privileges, retirement benefits with Civil Service rights. New building and most modern equipment available. Quarters available, laundry furnished. Good beginning salary, annual increases. Write; Personnel Director, Rancho Los Amigos Hospital, Hondo, California.

Registered PHYSICAL THERAPIST needed for well equipped department in association with nationally known crippled children hospital. Splendid, sound personnel policy and cordial atmosphere. Apply Personnel Director, Elyria Memorial Hospital, Elyria, Ohio.

STAFF PHYSICAL THERAPISTS for progressive rehabilitation program in expanding Chronic Disease Hospitals in Baltimore and Hagerstown, Maryland. Starting salary $4,040.00 with annual increments, vacation and sick leave. New and well equipped clinics. Montebello used as teaching hospital for medical students, nurses and physical therapists. Inexpensive living quarters available. Apply Dr. Florence Mahoney, Director, Rehabilitation Medicine, or Miss Dorthea Barthel, Supervising Physical Therapist, Montebello Hospital, 2201 Argonne Drive, Baltimore 18, Maryland.

CEREBRAL PALSY THERAPIST in county health department. Progressive program in expanding Bay Area. Requires California cert. plus 1 year exper. in phys. ther.; $415-$505 a month. Contact I. Schnayer, Alameda County Civil Service, 188 12th Street, Oakland 7, Calif.

PHYSICAL THERAPIST for expanding department in a new 50-bed rehabilitation hospital. Newly equipped department treating polio, orthopedic and cerebral palsy children. Forty-hr week; three weeks' vacation; Blue Cross available. Write: Administrator, Crippled Children's Hospital, 200 Henry Clay Avenue, New Orleans, La.

MALE PHYSICAL THERAPIST: Opportunity for professional advancement in new complete Rehabilitation Center. Progressive general hospital of 360 beds of which 44 are acute rehabilitation beds. For further details write to Coor. of Rehab. Center, Fairview Hospital, Minneapolis 6, Minn.

PHYSICAL THERAPIST: Male or Female for fast growing physical therapy department in 403-bed general hospital to be over 550 beds in a few months. Excellent opportunity to grow with us. Liberal personnel policies. Salary based on experience. Apply: Personnel Director, The Springfield Hospital, 759 Chestnut Street, Springfield 7, Massachusetts.

PHYSICAL THERAPIST $392-$491 to work in Comprehensive Rehabilitation Center with major expansion of P.T. Department. Social Security and pension plan, extensive fringe benefits. Apply San Mateo County Civil Service Commission, Court House, Redwood City, California.

HEART OF THE OZARKS VACTIONLAND: position open for a qualified physical therapist to work in a progressive 400-bed general hospital. The present staff of two male therapists has a case load consisting of cerebral palsy, polio and general P.T. An additional physical therapist is needed in this new, modern, fully air-conditioned department. Starting salary is $375 per month with periodic increments. Contact Personnel Office, Burge Hospital, Springfield, Missouri.

Positions Available

Opening for Staff Physical Therapist in outpatient Rehabilitation Center directed by physiatrist. Wide variety of treatment program. Coordinated physical, occupational, speech-hearing, psychological, vocational, and social services. Excellent personnel policies; up to 3 weeks' vacation. Contact R. A. Silvanik, Administrator, The Rehabilitation Center of Summit County, Inc., 326 Locust Street, Akron 2, Ohio.

BEAUTIFUL NEW YOUNKER MEMORIAL REHABILITATION CENTER, recent 120-bed addition to Iowa Methodist Hospital, has openings for staff therapists. Both in- and outpatient work. Competent supervision, professional staff and assistants. 40 hour week, good pay and benefits. Opportunity for promotion. Excellent working relationships. Des Moines is city of over 200,000 population with outstanding recreational and cultural events. For complete information contact Personnel Director, Iowa Methodist Hospital, Des Moines, Iowa.

QUALIFIED physical therapist for outpatient center for cerebral palsied children. Well equipped center established 1950 supported by Chest. Program also includes nursery school and class for mentally retarded children. Pleasant surroundings, competent and congenial staff, opportunity to use initiative. Four-week summer vacation, generous Christmas holiday, social security, sick leave, annual increments. Starting salary $3,800 minimum, more if experienced. Interview arranged at our expense. Write Mr. John J. Evans, Executive Director, United Cerebral Palsy, 3601 Victory Parkway, Cincinnati 29, Ohio.

WANTED: Chief Physical Therapist for established department, sponsored by the Easter Seal Society, in 300-bed County Hospital serving mostly adult orthopedics. Two wks. annual vacation, 12 days sick leave, social security, free laundry, meals at cost. Salary open. Duval Medical Center, 2000 Jefferson Street, Jacksonville 6, Florida.

Wanted for CP CENTER in Richmond, Virginia: Physical therapist, 11 months' program, 1 month vacation; salary commensurate with training and ability. Apply directly to Director, OTC Workshop, 201 W. Brookland Park Boulevard, Richmond, Virginia.

IMMEDIATE OPENING: Qualified male or female therapist, 1-2 years experience, for modern 500-bed hospital. Salary open; commensurate with experience. Five-day week, vacation, sick leave, 7 paid holidays. Write: St. Vincent Hospital, Worcester, Mass.

GRADUATES OF APPROVED SCHOOLS FOR PHYSICAL THERAPISTS, *new legislation provides that,* under certain conditions, *you may now practice in California pending your registration in this state.* California has positions open in State Hospitals, the Veterans Home and special schools for handicapped children. Good salaries; liberal employee benefits and retirement plan; promotional opportunities. Streamlined examinations twice a month in San Francisco and Los Angeles. Write State Personnel Board, 801 Capitol Avenue, P.T. 71, Sacramento 14, California.

LONG ISLAND HOSPITAL, the Chronic Division of the Boston City Hospital has a position open for a physical therapist. Forty-hr. week, vacation, sick benefits, maintenance if desired. Contact the Supervisor, Physical Therapy Dept., Long Island Hospital, Boston 69, Massachusetts.

COMMUNITY SERVICE for two general hospitals, one outpatient clinic, one geriatric hospital. Starting salary $4,000. Social security. Two weeks' vacation, sick leave. Write Jack Gamet, 2233 W. Harvard Ave, Roseburg, Oregon.

WANTED: Qualified Physical Therapists, 500-bed, modern, general chronic disease hospital. Salary dependent on experience; liberal vacations and sick leave benefits, lunch provided. Apply Executive Director, St. Barnabas Hospital, New York 57, New York.

PHYSICAL THERAPISTS: Ten general hospitals located in eastern Kentucky, southwestern Virginia, and southern West Virginia, operating on a regional pattern. Three Central and seven Community hospitals, Board certified Physiatrist in each Central hospital supervises physical therapist within region. Active ambulatory patient clinics, progressive minded medical staff, modern equipment. Salaries at $4,440, $5,340, and $6,420 per annum depending upon qualifications. 40 hour week, 4 weeks paid vacation, 7 paid holidays, anual increment. Write To: Miners Memorial Hospital Association, Box #61 Williamson, W. Va.

(*continued on next page*)

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IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.

Positions Available

PHYSICAL THERAPIST: Experienced. Wanted for active, well equipped department in a 154-bed hospital with expansion program under way. Pleasant surroundings in north suburb of Chicago. Modern housing. Recreational facilities and cultural activities available. Good salary, 40-hour week, varied cases treated. Contact Personnel Director, Highland Park Hospital, Highland Park, Illinois.

Opening for TWO REGISTERED STAFF PHYSICAL THERAPISTS in modern 800-bed general hospital. Wide variety of patients. Forty-hour week, annual two week paid vacation, sick leave, salary dependent upon experience. Approved school of physical therapy connected with the department. Contact Jack C. Hays, Chief Physical Therapist, Physical Medicine Department, Baylor Medical Center of Dallas, 3500 Gaston Ave., Dallas, Texas.

WANTED: Registered Physical Therapist for 190-bed hospital, 60 miles north of Detroit on St. Clair River. Write Administrator, Port Huron Hospital, Port Huron, Michigan.

STAFF THERAPIST AND ASSISTANT CHIEF. General medical and surgical cases, in- and outpatient service. Opportunity for varied experience. Vacation, sick leave and social security benefits. Apply: Mr. Norman Schreck, Coordinator of Rehabilitation Services and Chief Physical Therapist. Physical Therapy Department, The Johns Hopkins Hospital, Baltimore 5, Maryland.

IMMEDIATE OPENING for registered Physical Therapist to operate modern, nearly new department in 81-bed general hospital. Department head position with opportunity to build strong department. Apply Administrator, Lebanon Community Hospital, Lebanon, Oregon.

PHYSICAL THERAPIST to fill vacancy in $1,250,000 expansion, APTA; AMA approved graduate. Complete diversity of treatments; 50% of census is children. Excellent wage and vacation plan. Contact Mr. R. Ware, Administrator, Sunnyview Orthopedic & Rehabilitation Center, 124 Rosa Road, Schenectady, New York.

Registered Physical Therapist for STAFF POSITION in 210-bed hospital. Liberal vacation, retirement and insurance plan. Quarters, if desired. Salary open. Wide variety of treatment. Write Morley Wilson, Sunshine Hospital, 750 Fuller NE, Grand Rapids, Mich.

IMMEDIATE OPENING: Qualified Staff Therapist for outpatient comprehensive rehabilitation unit in University setting. Multiple disabilities and all age groups accepted. Minimal salary $4800.00 depending upon experience. Female therapist preferred. Apply Executive-Director, Medical Center Rehabilitation Unit, Box 86 University Station, Grand Forks, North Dakota.

Physical Therapist for field services in Westchester County New York Department of Health. Work with orthopedists, physiatrists, and general practioners in care of patients in home and clinic. Treatments for all age groups with varied disabilities. Salary $4,230 to $5,430; 35 hour week. Social security and pension. Apply Miss Doris Krumlauf, Supervising Physical Therapist, Westchester County Department of Health, White Plains, New York. Phone WH 9-1300 EXT. 456.

STAFF PHYSICAL THERAPIST for Cerebral Palsy School-Clinic, of Atlanta, Inc. Day School program, clinic and outpatient services for 100 children ranging in age from 18 months to 18 years. Five-day work week, public school holidays, two weeks' summer vacation, sick leave, salary open. Send qualifications and work summary to: Mrs. Harold M. Seymour, Administrator, the Cerebral Palsy School-Clinic of Atlanta, 1815 Ponce de Leon Avenue, N.E., Atlanta 7, Georgia.

WANTED: MALE PHYSICAL THERAPIST to establish and take charge of a physical therapy department in a 200-bed general hospital. Would like to know amount of experience, salary expected, number of work hours per week. Write E. J. Lauretti, M.D., Mercy Hospital, Muskegon, Michigan.

Wilmington, N C.: 300-bed general hospital has opening for an associate R.P.T. in well equipped department. Salary open. Excellent beaches, fishing, hunting nearby. Write to Charles N. Darden, P.T. Department, James Walker Memorial Hospital, Wilmington, N. C.

REGISTERED PHYSICAL THERAPIST for well equipped department in 425-bed general hospital, located in pleasant, residential, lake-shore suburb of Chicago. Good salary, 40-hour week, three week vacation. Apply: Personnel Office, Evanston Hospital, 2650 Ridge Avenue, Evanston, Ill.

RESEARCH SETTING IN MANHATTAN—NEW FIELD sponsored by National Institutes of Health: treat patients in Nursing Homes with Rehab. Team under Physiatrist. Weekly Team & Staff Conference. Above average pay with annual increments; 3 weeks vacation plus 3 religious & all legal holidays; sick leave; half time can be arranged. Send résumé to R. L. Bloch, M.A., RPT, Senior PT, STUDY OF REHABILITATION POTENTIAL OF NURSING HOME POPULATION, Dept. of PM&R, New York Medical College, 1 E. 105 St., New York 29, NY (PL 5-2298-9)

STAFF PHYSICAL THERAPIST to work in an Outpatient Rehabilitation Center. Present plans are being drawn up for a Comprehensive Rehabilitation Center. Liberal fringe benefits and good starting salary. Contact Gerrit H. Wiegerink, Executive Director, Armen S. Kurkjian Rehabilitation Center, 941-43 Wealthy Street, S.E. Grand Rapids, Michigan, or call collect GL 6-9567.

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Ambul-Aid has a broader base than any other walker—wide enough so a wheelchair can go inside. Attractive and solid appearance builds patient confidence. Patients are not afraid to walk, even the first time.

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Unique Axillary Crutch Attachments—not found in any other walker—provide three exclusive advantages: (1) Finger-Tip-Control Lever locking device allows easy adjustment to *any* angle, *any* height in a matter of seconds. (2) The Crutch attachments are firmly locked in any desired position and give positive support. (3) Underarm supports are much larger than the "T" shaped pieces found in standard walkers; they are shaped to assist in correct body alignment and to prevent patient's falling forward. A hip strap placed in back of patient is designed to prevent falling backwards.

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The four large ball-bearing casters have step-on brakes, which provide important advantages. By applying the brakes on two casters, the movement of the walker is slowed down. By applying all four brakes the walker can be positively locked in place—an important safety feature in many cases, such as if the therapist should have to leave a patient unattended.

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PARALLEL LOCKS for Casters, another unique feature, prevent lateral motion. On Ambul-Aid each swivel caster has a parallel lock, which can be set to prevent the caster swiveling. Locking either the two front or two rear wheels gives the patient better control of the direction of the walker.

TELESCOPIC LEGS allow height adjustment to accommodate patients from 4'6" to 6'6" in height. Child-size Ambul-Aids are also available for children from about 3'3" to 5'0" tall.

The height adjustment may also be used to give a lateral tilt, simply by lengthening the two legs on one side. In using the walker with hemiplegics, this elevation assists the patient in bringing the affected leg through the sagittal plane, rather than using the "circumduction" gait.

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PC 2341—Ambul-Aid—Adult Size—Same as 2340 less ankle straps and abductor rods ***$179.50***

PC 2341C—Ambul-Aid—Child Size—Same as 2340C less ankle straps and abductor rods ***$173.50***

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